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Science Fiction

Vol. 9 JULY, 1934 No. 3

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depicts a scene from the story entitled "Beam Transmission," by George H. Scheer, Jr.—Drawn by Morey

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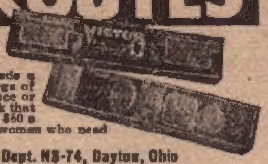

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31x5.25-21	2.25	.15
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AMAZING STORIES

THE MAGAZINE OF SCIENCE FICTION

VOLUME 9

July, 1934
No. 3

T. O'CONOR SLOANE, Ph.D., *Editor*
Editorial and General Offices: 222 West 39th Street, New York, N. Y.

Extravagant Fiction Today . . . . . Cold Fact Tomorrow

Asteroids and Meteoroids

By T. O'CONOR SLOANE, Ph.D.

THE solar system, the central sun and its planets Mercury, Venus, our earth and the outer planets as we may term them, follow in their movements and have in their relations to each other some laws, which impress us as curiously simple. We might anticipate them as being quite natural, except that their simplicity surpasses what we know of Mother Nature on this little ball of metal, rock, water and detritus on which we live, support ourselves, or try to, and pretty effectually kill each other. To Mussolini is accredited the statement that war ennobles a nation. Much that has occurred in recent years makes one doubt the accuracy of such a remark. If it is merely a question of killing people, we will find that it is taken excellent care of by the automobile, but no one thinks that automobile deaths ennobles the world.

Bode's law is an impressive example of an utterly simple relation between the distances of the planets from the sun. It will be found stated in any good astronomy book. By taking a simple series of numbers starting with 1 or unity, multiplying each by three and then adding four to each we get another series the numbers in which are approximately proportional to the individual distances from the sun of our earth and of most of the other planets. Jeans notes the interesting fact that the law was enunciated before the discovery of the planet Uranus, of the asteroids and of Neptune. When these were discovered, Uranus and the asteroids were found to fit excellently well into the Bode series. Neptune was obstinate and did not join the group except in a poor approximation. The planet acts up to the personality of the ancient sea deity of the Greek mythology, whom Homer depicts as anything but an interesting or well behaved character.

The name, asteroid, meaning star-like,

is obviously a poor one, planetoid is often used and is better.

In their motions around the sun, the planets have for their path one of the simplest curves in mathematics—the ellipse. It is one of the conic sections and the simplest of all three of them, for the circle is one limit of an ellipse with both foci in one. The line taken as extending from a planet to the sun is called its radius sector. It follows the planets which move in ellipses varies in length, and the planets vary in the rate of their rotation so that their radius vectors sweep over equal areas as the planet goes through its elliptical orbit. It will be understood that the radius vector of a planet always extends from it to only one focus of the elliptical orbit and therefore varies constantly in length.

If we go on with this picturing to our inner consciousness the simplicity of some things in our cosmos or solar system, as it is better to call it, we will come to quite a curious thing. Suppose we draw all the planets in a straight row, each in relative size and solar distance, we will find if we draw two lines one above and one below them, we shall have the section of a fusiform, or spindle-shaped solid pointed at or starting at the sun, swelling out to pass the planet Jupiter, and coming to a point in distant space. (Sir James Jeans).

In this section there is a gap or space with a quantity of little planets, planetoids they are properly called, asteroids is one incorrect name which has been bestowed upon them. These move through space like the planets, each asteroid in its own orbit, around the sun. It is the many asteroids in their orbits, that in stories of interplanetary travel, the space ships are supposed to dread. Nearly a thousand have been identified and there are lots more of them. One theory is that they are the fragments of an exploded planet, whose orbit lay between little Mars and gigantic Jupiter. These little asteroids are very well behaved and never come into collision with the earth. The fusiform solid within which the planets fit fairly well, some far too small for their position, is taken to suggest a one time filament of matter extending out from the sun and collapsing into the planets of our system. We may wonder whether the asteroids are spheroids or angular fragments of metal or rock. It would seem that space-ships could avoid them by going north or south. But as yet there are no space-ships to try it out.

Sometimes what is called a shooting star is seen to fly across the sky, a brilliant path marking is course. This has had assigned to it a rather poetical name of meteor. The brilliant light is attributed to friction with the atmosphere of our earth. It is hard to believe that a few seconds flight through the air should heat a rock or a piece of iron alloy to incandescence or could even cause it to burst into violent explosion. Meteors do glow with incandescence, they sometimes explode like a bombshell—and there is nothing to make them do it except friction with the air. It implies an almost inconceivable velocity.

Before they are visible they may be called meteoroids. Webster unhesitatingly accepts this name with its definition, although the term is little used. A meteor sometimes falls to earth, often bursting into fragments, which scatter in all directions. In the middle of last March a meteor flew over Western Canada and burst with tremendous violence, shaking houses in central Alberta, and frightening the people, who rushed out of their dwellings in alarm. It is proposed to send out a searching party to secure some of the pieces. The authorities in Yale University believe that the fragments reached the earth not far from New

Haven, Connecticut. This event certainly brings the meteor pretty close to our doors.

A few years ago there was a fall of a huge meteorite in Siberia. Most unfortunately it was not adequately investigated. There is no adequate record of its fall. It is supposed to have devastated a considerable extent of country. Other large meteorites are reported in Mexico.

In Arizona there is a curious crater-like depression, 4,000 feet in diameter and about 550 feet deep. It lies in a plain and a wall of rock, over 100 feet in height surrounds it on its edge. This is attributed to the fall of an enormous meteorite, but the mass has never been found, although it has been searched for most thoroughly. Several tons of meteoric iron alloy have been found in its vicinity, but borings have failed to reach any great body of metal buried there.

If the mile-wide canyon with its hundred foot wall is due to a meteorite and if the great Siberian devastated area is due to one, they would seem to be very terrifying visitants. Yet they have spared human life. One which fell near a laborer in England was the first step in the path, which led to the conclusion that they came from outer space and that "shooting stars" were meteorites heated to incandescence by friction with the air. The paths of shooting stars, meteors they are properly termed, must lie within the atmosphere, if friction with the air produces their heating. This leads to the conjecture, for it is little more, that they become luminous at a height of some seventy miles. The curious thing about them is that the brilliant incandescence affects only a very thin layer of the surface, not over one twenty-fifth of an inch in depth.

As a *museum piece* on public exhibition, the largest meteorite is in the Museum of Natural History in New York. It was brought by the Arctic explorer, Robert J. Peary, from Greenland on his trip. Little has been said about the effect on his compass of the 36½ ton mass of meteoric iron. The Esquimaux whose intercourse with whalers and explorers had taught them the use of iron are said to have used pieces of the meteorite for making spear heads or other objects.

The largest iron alloy meteorite which has been discovered and adequately reported as to dimensions and composition is in Southern Africa. It is called the Hoba meteorite. It lies about twelve miles west of the town of Grootfontein, a settlement of over twelve thousand inhabitants in S. W. Africa. Its recorded discovery is put at about the year 1920. It was virtually unknown previous to 1914. This does not say that individuals may not have seen it.

It is now a national monument and presumably protected so as to be free from injury. It is but fair to say that it is so hard that it cannot easily be defaced which has operated to protect it. It has been attacked by some unknown person with a blast-lamp, whose action has left traces on its surface. It is roughly rectangular in its surfaces, without projections of any importance. As it lies thirteen people can stand upon its top or upper surface. It is about ten by nine feet in horizontal area. Its greatest thickness in a vertical direction at one end is 122 centimeters, a little over four feet; at the other end it is 75 centimeters or thirty inches thick. Taking its specific gravity as 7.96 the weight figures out at nearly eighty tons. Before it was incandescent it may have weighed ten per cent more. As it embedded itself in the earth it is supposed to have formed a layer of ferruginous shale, which encases it partially to a thickness of about twelve inches. If this was formed from the meteorite it

provides the nearly ten percent to be added to its weight. It has its own magnetic polarity.

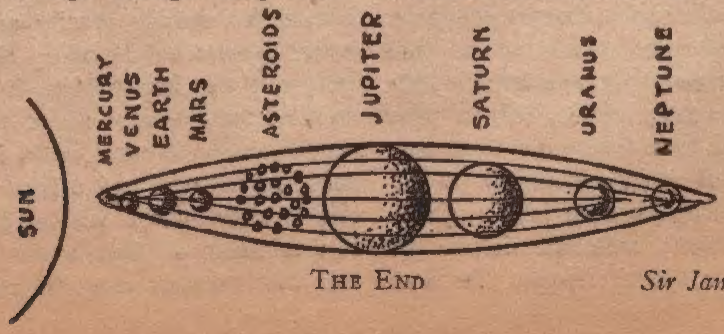
Its analysis gives iron 81.29%—nickel 17.49% leaving a little over one per cent to be determined. It is so intractable that it took two days work of two men to cut off a fragment for analysis.

The planets of the solar system are approximately spherical—the asteroids we may assume to be the same—but no spherical or spheroidal meteorite is on record. The specific gravity of the earth is approximately that of the iron meteorites—this gives a foundation for the belief that its core or central portion is mostly iron.

There are also meteorites of stone containing comparatively little metallic iron. These naturally do not get into museums in as large numbers as do the nickel-iron ones, which have a more distinctive appearance.

The origin of meteors is a profound secret, literally speaking, in the depths of nature. We read of the earth colliding with a comet, but no one knew of it from any effect produced, on account of the tenuousness of the substance of the celestial visitor. Another curious problem concerns the size of meteors. It is true that we have found upon the earth, a number of them of considerable dimensions, as in the case of the South African one just noted and of the Peary meteorite, yet the belief holds that there are numbers of very small ones, and if these get heated to a sufficient extent to a high enough temperature they will of course seem larger than they really are. The filament of an electric lamp whose thickness is measured in the thousandths of an inch seems quite large when seen across a room, and the same effect undoubtedly obtains in meteors. But there are large ones, the South African one is supposed to weigh about 200 tons and if the Arizona Canyon was made by one it must have been an enormous projectile. It has occurred to prospectors that if there were such a meteor in the Arizona crater, it would be a very valuable property, and a number of drillings have been made in hopes of finding it, but so far without success. Some fragments were recovered in the drilling and around the site of the crater bits of the meteor have been picked up.

Of the great Siberian meteor comparatively little is known; because of its distance in the almost arctic wilderness it was never investigated except after a long interval and then it is probably fair to say, inadequately. The destruction in the surrounding forest from its fall was said to have been felt for many miles and we cannot but hope that some time in the future a really adequate investigation will be made and perhaps the meteorite itself may be discovered. We know that Peary's meteorite with its smaller companions, rested as far as we know, intact upon the Greenland shore, but we have not yet found out why the Arizona meteorite cannot be found, and as yet we do not know what may be the results of a further search in Siberia.



THE END

Sir James Jeans.

Life Everlasting

By DAVID H. KELLER, M.D.

Serial in Two Parts—Part One

Illustrated by MOREY

Dr. Keller combines the talent of a writer with the knowledge of an accomplished physician of long experience in his very deeply specialized field. The present story is most delightfully charged with a kindly view of human nature on its pathetic side, and this first portion will leave the readers eagerly awaiting the denouement which will appear in our next number and will be beyond the surmises of our readers, but it gives a wonderful touch of psychology. The author's years of study in his field gives special force and interest to the story.

CHAPTER I

Four Failures Meet

SALLY was sweeping the stairs. When she was not doing that she was spending her time making beds, scrubbing pots, and washing windows. Life in the cheap boarding house was just making dirty things clean, as far as Sally was concerned.

From her babyhood she had suffered from poverty and asthma. These twin afflictions had stunted her body and warped her mind; when she was not conscious of the struggle to breathe, she was keenly aware of the fight to earn the necessities of life. The dual conflict left her no time for the finer things of the world; fortunately, she was only dimly aware of their existence. Days of work, with nights of respiratory anguish, dulled her soul till she had only one pleasant anticipation, the thought of an early death. At twenty she was aged and worn, an old woman, who had never been loved since the day her mother had taken the baby girl in her arms, cried a little, and died.

As she swept the steps perfumed youth passed her. Mary Casey, she had been called in Shamokin, Pa., but now as a jitney dancer in the Moonland Dance Hall she was called Valencia Moore. Her body was formed of curves, and her mentality was slightly above that of the adenoid moron. Her parents, alternating between love and hate, had procreated her in lust and had raised her in an environment that would have mired the whitest lily. She grew up to be unmoral rather than immoral. Wanting clothes, perfume, and a good time, she commercialized her sex appeal by spending her days in bed and her nights in the arms of anyone who would pay ten cents for a one-minute dance.

For six months she had passed Sally, the scrub-woman, several times a day without speaking to her. Sally was conscious of her only as one of the pieces of dirt that some day would be swept out of the house. The two girls had nothing in common except that, anatomically, they were both females.

As one girl swept up the steps, leaving behind her a cheap perfume, and the other swept down the steps, leaving behind her just dust, Harry Wild, crab-footed down from the third floor, back,

"I want to talk to you people," he began, "and I am going to try to be as brief and as plain as I can."

and passed both of them. He had a hump on his shoulder the size of the regulation football, a right leg that was four inches shorter than the left leg, a twisted face, strabismus, and a clear conscience. For years he had made a good living selling papers and smiling at his patrons. On the street he had friends from every walk of life. In his room he read books, fed mice, and dreamed of a day when some woman would love him. For two years he had written a daily love letter to Sally and so far had never had the courage to do anything with them save put them in his trunk. Sally knew him, adored his smile, hated his mice, and kept his room clean.

The third floor front held the mystery of the house. He was a man with a steady income and no occupation. John Jones was his New York name. Every two weeks he received a letter with a check. He was clean, bald and old. He spent a little of his income for food, more for clothes and the rest in the cheap dance halls of New York. He danced one-third of the dances, rested the other two-thirds, and never gave a hostess more than one ticket. He hoped that some night he would find the woman he was looking for. As he was hunting one with the intelligence of Minerva, the body of Venus, and the kindness of the Mother Mary, his quest was doomed to failure. So, he danced and twiddled his thumbs and wished that his heart muscle and his moral code would allow him to spend ten dollars on one woman instead of ten cents each on many. He had danced with Valencia Moore, but he did not know that she lived on the floor above him.

Jones bought his newspaper from Harry Wild, and occasionally danced with Valencia Moore. Wild smiled on the other three, and dreamed of loving Sally. Valencia paid no attention to any one of them; they simply did not enter her plan of life. Sally kept things clean for all of them and fantasied a life free from dirt and asthma.

SINGLE, they might have been interesting to the sociologist; as a quartette, they made a harmonic failure. From the animal viewpoint, they shared certain biological urges: they slept, ate and moved as necessity demanded. Spiritually, there was no contact. Even had Sally known of the letters the newsboy was writing to her, she would have reacted with a confused negativism. That any man should love her was a thought so impossible, that it never entered into her consciousness.

These four were failures, and all of them through no fault of their own. Heredity, environment, disease, the inhibitions of a false standard of morality had twisted and warped them mentally, spiritually and physically, till they were caught in a web of fate from which there was no escape.

The Metropolis could have furnished a hundred thousand fours, as badly assorted, unharmonic failures, as these. In fact, there was no reason why they should have been selected as the experimental basis for a scientific study that was destined to change in every way the life of the human race. There were thirty others living in that boarding house, any four of whom might have served equally well. But the Scientist selected these four. His decision was not exactly a haphazard one. He wanted a beautiful woman who was bad, a good woman, sick and soulless, a gentleman whose body was shattered, and an old man who was trying to be young.

The Scientist found what he wanted in these four failures.

CHAPTER II

The Initial Experiment

HARRY ACKERMAN had something but he was not sure of what to do with it. For five years he had used the serum on the lower mammalia, had checked, rechecked and double checked his results, yet continued to doubt his own observations. No matter what animal he used for his experiment, the results were the same.

His results were so uniform, the method so simple, the final analysis so weird and unusual that he simply could not believe what he saw. It was impossible to confide in any of his brother scientists; they would have considered him insane; he refused either to be laughed at or to spend the rest of his life behind the walls of a hospital for psychotics. In addition to this he wanted to have the sole credit for his discovery, and that selfishness made him become an antisocial hermit. It was not a question of selling his brain-child; he neither needed nor wanted money, but he did want recognition leading to fame.

Now at the end of five years he was ready to begin human experimentation. That, after all, was to be the crowning effort of his years of work. He felt that he knew what he could do with the body, but when it came to the mind, he was not so sure. It was difficult to imagine the results properly; it was impossible to determine the size or the number of the doses. It was one thing to feed the Panacea to crickets or mice, and another thing to inject it into the veins of a man. Too little would be tantalizing; too much, dangerous. He could not keep his subjects in cages as he did the little monkeys.

Yet, he realized that sooner or later, he had to face the issue. It would not take him more than one minute to inject five cubic centimeters into a human vein. Once that was done, all he would have to do would be to wait for the results. If he failed, why other men had failed before; if he succeeded, life would be changed, not just one life, but the life of the Genus Homo.

For the present the last thing he wanted was newspaper publicity. A cleverly worded advertisement would have given him experimental material by the hundreds, but it would also have brought unpleasant notoriety. Just now he had to work in secret. That is why he came to New York, where a man can be lost more quickly and more completely than he can in the Sahara Desert.

At times he had contemplated giving himself an injection of the serum. That would have been the easiest way and the simplest. But he was not sure of the results, and he could not face the thoughts of an accident, not on his own account, but for the sake of his son. The last ten years of his life had been spent for the good of the boy. Otherwise, he would not have had the courage or the vision to go on with the work. If he took the serum and died, as some of the animals had died in the early years of his study, there would be no one left to love the little fellow, and, though he rarely saw him, he felt that love was very essential for the welfare of Harry Ackerman, Jr.

There was no special method in his selection of a boarding house when he came to New York. He simply picked out a cheap one in a poor neighborhood, paid a month's rent in advance and started to become acquainted with his fellow boarders. From those he met, he selected the four failures, and, much to their surprise, he asked them

to spend a Saturday evening with him. The hard part of the program was persuading them to accept his invitation. Each required a different approach, and, with the exception of Harry Wild, none of them would have come, had he known the others were to be there.

Sally came because the landlady ordered her to be nice to a star boarder. John Jones came because it was the first time anyone had been kind to him in New York without charging him for it. Valencia saw a chance to do some fancy gold-digging and besides, a twisted ankle kept her from the dance hall. But Harry Wild had found a man who knew more about mice than he did, and that was enough for him.

OF the five at the party, only the scientist was at his ease. Sally was breathing hard and wondering how soon she would become a dope-fiend. Adrenalin did not help her much nowadays, but morphine made the hell of breathless life a heaven of comfort in fifteen minutes. Wild kept thinking of those love letters never sent and wondering if Sally was looking at the Rogers Group or at his twisted spine. The "dancering" temptation could not understand why the guy had asked the rest of the crowd, when she could have given him seventy minutes of pleasure for every hour he was willing to pay for. The old man could not keep his eyes off of her curves, but he knew that his myocardium could not stand the strain and, besides, her English was impossible.

Ackerman turned on the radio, passed the candy, cake and cigarettes, and tried to be the perfect host. Socially, he was a failure; the party was nothing more or less than five incompatibles meeting in a test tube. He shut off the radio just as the "Quarrelsome Quartet" gave place to the "Malted Brew advertising."

"I want to talk to you people," he began, "and I am going to try to be as brief and as plain as I can. There is a serum I have been working on for some time, a medicine, you understand. In some ways I am a physician and I have tried to discover something that would help people to get well. It is something new, and I am not sure how much good it will do, but I am sure that it will not hurt the people I give it to. I am not in regular practice, so I cannot give it to my patients. That is why I have asked you here to-night. I believe that it will help Miss Sally Fanning's asthma, that it will improve Mr. Jones' heart trouble and that it will make a different man out of my friend, Harry Wild."

"What do I get it for, Old Nut?" asked Valencia Moore.

"You get it for anaemia of your pocketbook. In other words, it means just one hundred dollars to you to take one dose."

"At-a-boy," she laughed. "Now you are talking my language. For a hundred bucks I would take a dose of any poison. Give it to me quick."

Sally Fanning, breathing harder than usual, looked at the dancing fool and then at the stranger, and then she gasped:

"I do not understand you, Mr. Ackerman. Do you really mean that you believe you can cure my asthma? And if you can, will the same medicine help Mr. Jones? Perhaps it will, but what has that to do with Miss Moore? Or Mr. Wild? They are not sick."

"It is hard to explain to you, Miss Fanning," answered the scientist, and there was a tone of patient kindness in his voice. "The serum I am going to use is a most peculiar one; it has, or at least I think it has, many different kinds of actions. There are different kinds of sicknesses, you know, and I

hope that all of you will be benefited by the injection. I am not promising anything definite, but I honestly feel that it will help everyone of you, and I am sure that it will not hurt you. When I told Miss Moore I would give her a hundred dollars, I really should have said that I am going to give each of you that amount, because you are all helping me in a study that is very important to my future. If you are ready, I will begin, perhaps first on Mr. Wild. He knows me better, and trusts me more, than the rest of you. Will you take off your coat and roll up your sleeve on the right side, Mr. Wild? There, that will do very well. Now, you all watch me. First, the tourniquet, then the needle goes into the vein and I slowly inject the serum. It really does not hurt at all. Who will be the next one?"

"I will," announced Valencia, "but first give me my hundred."

CHAPTER III

The First Results

"GOOD MORNING, Miss Fanning. How is the asthma?"

Sally, the Scrub, looked up from the brown stone steps she was cleaning. Ackerman was smiling down at her.

"Your medicine helped me," she answered simply. "All my life I have taken Green Mountain Asthma Cure, and lately adrenalin, and even morphine, and everything else that anyone advised. They all helped for a while and then I was as bad off as ever. Of course, having to work for a living made it hard for me. Perhaps your medicine is the same as the rest, good to-day and no good to-morrow, but it certainly helped me to sleep, and this morning I feel strong and rested. If I felt this way all the time, I might amount to something, might have courage to try doing something different; might even go to night school and get an education. I read in the paper once that, even if a woman was ugly, it helped if she knew something."

"But you are not ugly."

She laughed bitterly.

"You must be blind. Look at my neck! And my hands, my hair. Dead, every bit of me. Work all day to earn an honest meal and a decent bed, and then work all night for the right to keep alive, every breath a battle. How could a woman be anything but ugly?"

"But you are going to be better. Suppose I tell you that in a little while you would be well, that your body would grow beautiful, your hair radiant? How would you like to sing as you work? To have people tell you your voice was lovely, your soul a thing of charm? What would you do then, Sally Fanning?"

"I would cry, Mr. Ackerman. I would be so happy, I would cry for the joy of it. I would brush my hair till it came alive and wash myself and put on clean clothes and go and sit in the park, in the sunshine and just breathe deep. It is a terrible thing to fight for every breath, as I have had to do all my life. I used to dream of being a bird, flying high in the sky, yet, having enough air left in me to sing; but always would come the waking and the asthma."

"Perhaps the dream will come true," replied the scientist. "Have you seen my friend, Harry Wild, this morning?"

"I always see him in the morning. We always see each other in the early of the dawn. We are the first up and out; he to sell his papers and I to do my cleaning."

"How did he feel?"

"He was smiling."

"But he always smiles."

"Yes, that he does, but this morning he said he felt better. You know he has trouble with his back; never speaks much about it, but the pain is there, where the hump is. This morning he said it was gone. Of course, he meant the pain. There is nothing can untwist the body of him. I guess he smiles to help forget his legs and his back."

"I like him," said Ackerman, quietly. "He is kind to the mice."

"They come to him," explained Sally. "Wherever he is, the mice gather. They used to be all over the house and now they all live in his room. Of course, he feeds them, but there is something more than that."

"Do you suppose they know he loves them?" asked Ackerman.

The girl frowned.

"If I don't get to work on these steps they will never be cleaned. But I will say this about Mr. Wild: He is a nice young man, as nice a young man as I ever cleaned after, and there would be more than mice loving him, if his back were straight and his legs even. But he was born that way and cannot help it, any more than I can help my having asthma."

"But suppose that would all be corrected? I mean suppose he would get well and be like other men?"

"Suppose you go and ask him? His stand is just around the corner. Suppose you stop talking to me about the moon and heaven and singing birds that never waken? You know and I know that just as he is now so he will be till they place pennies on his eyes."

"I am not so sure of that," retorted the scientist. "At least, I will go and buy a morning paper from the lad."

Harry Wild was singing as he handed the lurid sheets to his regular customers. There was little in the papers that was worth singing about.

"HAPPY?" asked Ackerman.

"You said it! No pain. Slept all night and woke as fine as could be. Turned on the radio and took my exercises. One. Two. Three. Four! Great stuff. Old twenty-three used to be hard to do, but this morning everything was easy."

He lowered his voice.

"Did you see Sally this morning?"

"I did, and she was breathing with the ease of an opera singer. She is a nice girl, Harry, only she lets herself be discouraged."

"It would be fine if things were different, Mr. Ackerman. Just suppose that she didn't have asthma, and suppose I was like other men, big and strong, and easy walking. Just suppose that! Say, that would be great stuff, wouldn't it?"

"You are going to be, Harry. First, the pain will leave you and then your short leg will get longer, and your back straight and even the mice won't know you any more."

"Quit your kidding. Still, it sounds nice. Think there is a chance that the girl will get over her asthma?"

Ackerman took a deep breath.

"You are all going to get well," he whispered. "All four of you. Strong and well and sane and good. You are going to be the first of a new race. It is too soon for me to be sure and too wonderful for me to see clearly, but if that medicine works, Harry, you will soon be able to love something else than just mice."

"Quit your kidding," blushed the boy. "But it would be nice, Mr. Ackerman, it would be nice."

IN the next twenty-four hours the inventor saw and talked to the other two of his experiments. He visited John Jones in his room, and found a puzzled man, eager to be questioned.

"Two years ago," he began, "the doctors told me I might die at any moment; so, I came to New York. They said that I would die on my feet, and I made up my mind that I would learn to dance and die with a pretty girl in my arms. After you gave me the serum, I went to sleep. It was the first night I missed going to a jitney dance hall. This morning things look different. I know now that I am not going to die that way. In fact, I feel so well that I am not sure I am ever going to die."

"That is an interesting statement," said Ackerman. "Suppose you kept on living, and growing stronger and younger? What would you do? How would you pass your time?"

"I would write. All my life I have wanted to write. There is nothing as fine as putting a piece of white paper in a machine and pounding out your thoughts on it. But for years I was too busy; had to make a living; lots of people depended on me for the necessities of life. I had lots of things to write about, but never any time, and when I did have the time the strength was lacking. Then my heart went bad after influenza. The doctors tried to be kind and lied to me at first. They called it post-influenzal asthenia. Later they told me the truth."

"So you tried to kill yourself dancing?"

"No. I tried to die while dancing. But it was not the dancing I was after. I wanted love. And no one is going to love an old, broken man. So, I took the best substitute. But not one of them gave me rest. Did you ever hear the girls talk in a dance hall, Mr. Ackerman? It is just too bad. I think everyone of them is feebleminded. And all they are after is a man's money. If a skeleton was worth a million, they would pretend to get hot, rubbing the wire that held his bones together. Just one night was enough for me to find that out. I told my first partner that I was enough of a healthy vulgarian to enjoy holding a pretty woman in my arms. For ten minutes they fought with each other for the next dance. I finally asked one of them what they were excited about, and she said that the first girl had spread the news that I was a wealthy Bulgarian. Of course, they had never heard of the Vulgate Bible."

"What do you think of Miss Moore?"

"She is as pretty as can be, and as soiled as man can make her. If she were disinfected and educated, and had the evil burned out of her, and if I were young, I think I could love her and be happy."

"Have you seen her this morning?"

"Yes."

"How is she feeling?"

"Said her ankle was O. K. She must be worried because she forgot to paint her face. She does not know it, but she is prettier without her make-up."

"I think she is going to change," commented the inventor.

CHAPTER IV

The Expert's Opinion

ACKERMAN waited for three weeks and then decided that it was time to check up on the results of the serum. Before giving the four injections, he had anticipated waiting at least six months, but two things had happened to make him change his mind.

In the first place, Harry Wild had a number of friends. Not the kind to invite him to dinner with them, but interested enough to go out of their way and buy papers from him, and slip him a fiver at Christmas. Some of them

had known him for years, from the time he had been a ragged, but smiling, street urchin. They noticed the change in him. Variations in the health and conduct of the other three might have gone and come without any one's knowing or caring, but, with the crippled man on the corner, it was different. Men talked to him and he did not hesitate to talk back to them. One man believed.

That night Harry Ackerman had a visitor. In fact, three. A man, a woman and a little child. The man lost no time in stating his business. He was the kind of man who had made his millions in Wall Street by taking an opportunity more quickly than the others. His name was Hiram Smith and the woman was his wife.

"And this is our son," he continued. "Our only son. Does that mean anything to you?"

"It does," said the inventor. "I have an only child and he—well, at any rate, I know what you are thinking of."

"Good. This little boy is bright, nothing wrong with his mind, but he cannot walk; he cannot even feed himself. He was born that way. Can you cure him?"

"I am not a physician."

"No. But you are the man who helped Harry Wild. I have known him for years. Financed his first newsstand. He knows about my boy, and he told me about you. During the last week I have had Harry to see three specialists. They have examined him in every way known to the medical world. They took a series of X-rays of his back and legs. They do not understand what happened, but they say that in a few more weeks he will be a perfect man in every way. Now, the boy says you did it. Did you? Can you do the same thing for this boy of mine? If you can I will give you one million dollars. And I am not saying what I will do if you can and refuse."

"There are other boys and girls in the world," whispered the inventor. "Your boy is not the only one who is not normal."

The woman carried the boy over and gave him to his father. Then she went over, knelt beside Ackerman, and looked up at him. In her youth she had been a beautiful woman.

"I AM not threatening you," she said, "and I am not bribing you with a million, but I am telling you this: I can never have another child. My husband loves me, but he says that he must have a son who can carry on the family tradition. That means another woman in his life. I have a son. Make him well! Do it for the sake of your wife."

"My wife is dead," said the man. "Take his coat off and roll up his sleeve, the right one."

He prepared a dose of the serum, and injected it into the boy's vein.

"I am promising nothing," he cautioned, "but I am asking two favors. First, I do not want any publicity. Second, there are three other people who have had the serum besides the newsboy. They live in this house. I will give you their names. I want you to take them to these specialists and have them examined. I also want their intelligence determined, their morals, their viewpoint on life. I want an analysis made of their digestion, the number of calories it takes per day to keep them in health. When they are finished, bring me the four reports. It might be interesting to have your son examined, now, again in a week, and a third time at the end of a month. I am leaving New York to-day. I will give you my address. Keep it secret. You can pay the expenses of the ex-

aminations; otherwise, you will owe me nothing."

"My boy is asleep," commented the woman.

"He will sleep. The first effect of the medicine is complete freedom from pain, which brings relaxation. Good night."

The man stood up, holding the sleeping boy close to him.

"I cannot let you do this for nothing. Dunn and Bradstreet rate me as one of the rich men of America. I pay my defts."

"Wait!" almost commanded Ackerman. "Wait till you see what happens to your son. If he is helped, you will be given a chance to pay the debt. I am not forgetting that there are other sick children in the world and I am not going to let you forget it either."

The visitors gone, he started to pack his bags. Frowning, he had to leave his work and open the door. A woman entered; glasses, tailored suit, a notebook told her occupation. She handed the man a card. She was Betty Farday, star sob reporter of the *Purple Flash*, New York's latest and most startling tabloid.

"I am asking for an interview, Mr. Ackerman. When any worthwhile events take place in this city, the *Purple Flash* gets the news first. Who are you? What are you doing in the city? What kind of serum do you use? What did you do to Valencia Moore who used to be Mary Casey of Shamokin and who for many months has had the reputation of being the worst taxi girl in the dives of the city? What did you do to her and how did you do it?"

"Did I do anything wrong to the young lady?" parried Ackerman.

"No. That is just it. I heard a rumor that there was something big going on; so, we looked up her record. That girl has been bad enough to satisfy the cravings of a dozen girls and several thousand men. She has not been satisfied to burn the candle of life at both ends, but has turned herself into a pinwheel of fireworks. She was diseased in every way, morally, spiritually and physically. In one more year she would have rested, quiet on a marble slab at the Morgue. Now, she is quite different; in every way. Her talk, her thoughts, her life. She does not even paint anymore and I'll tell the world that she is O. K. without it. One of the most beautiful dames I ever saw, and don't forget that the men all know it. And what does she tell them? 'If you want me to think kindly about you, go and make someone happy.' Pollyanna stuff. I have seen her and she talks freely. To use a good word of the psychologists, she has insight. She knows she has changed, and she gives you the credit. Says that one night you gave her a hundred dollars and a shot in the arm and since then she has been different."

"TALKED too much," commented Ackerman. "Changed her but could not take the eternal feminine out of her. Listen to me. Ackerman is not my real name. I am leaving the city tonight, destination unknown. You can give me all the publicity you want, but you cannot identify me. You find out all you can from Miss Moore and then you interview a girl by the name of Sally Fanning, and two men, Harry Wild, the newsboy, and John Jones, retired gentleman. They all live in this house. Get their story. Study it, but please do not put it in the *Purple Flash*. Write is as it should be written, and sell it to the *Times* or the *Sun*. If it is true, they will pay you for it."

"Where are you going and what is your real name?"

"No!" said the inventor, returning to his packing.

The reporter looked at him and she smiled.

"You are probably a wise man," she commented, "but you do not know very much about newspapers and nothing at all about the *Purple Flash*. We are like the Canadian Mounted Police. We always get our man. If the news you represent is as important as I think it is, we will get it. As far as the *Times* is concerned, I used to work for it. The *Flash* tripled my salary to get me. Now will you tell me what I want to know?"

"No. It is a two-letter word beginning with an 'N' and ending with an 'O' and it means negation. Use it in your crossword puzzle and let me finish packing."

"Did you, or did you not, on the night of the third give a dose of serum to four people?"

"I did. I told you that. I told you their names and the fact that they lived in this house."

"What was the serum? What was it supposed to do to them?"

"I have no answer."

"Did you, just before I came in, give a dose of the same serum to a little boy carried by Hiram Smith, the 'Wolf of Wall Street'?"

"I have no answer."

"Let me tell you something. Two days after you gave Harry Wild his serum the *Purple Flash* knew about it. We paid him to keep quiet, at least, as far as reporters are concerned. We have had six men on the case ever since. We know all about the Fanning girl and her asthma and John Jones and his cardiac trouble. We have made an independent X-ray examination of Harry Wild. In the office there are over twenty thousand words ready for release. We know that the newsboy told Hiram Smith, and that Smith had him examined. We know about Smith's son. And here is something to make you smile. We know who you are. Don't ask how. None of your friends betrayed you, but you left a trail that was easy to track.

"FIVE of the greatest scientists in the United States have been under the employ of *The Purple Flash* for the last week, studying the four people you gave the injections to. It is their opinion that if you have a serum that will work on them, you have something that will revolutionize the entire social and economic status of the human race. We are not interested in the first four except in regard to their relation to the next four million or four hundred million. If you have what they think you have, it is too great a secret for one man to hold. It should belong to the nation; in fact, one of the men said it should belong to the world.

"Suppose you should die? Or develop insanity? Don't you see what a priceless secret would die with you? And how are you going to use it? What price are you going to ask for it? Are you going to give it free, as the man who discovered insulin did? What will it do besides cure asthma, heart disease and make twisted bones straight? Will it change the personality? Make bad people good?"

Ackerman shook his head.

"I do not know. That is one of the things that I came to New York to find out about, but you people are making it too uncomfortable for me. I hate publicity. It never occurred to me that any paper, especially one like yours, would go into a mystery so thoroughly. Why did you do it?"

"To increase our daily circulation which is already over five million. Come

on, Mr. Sidney Biddle, give me a break and talk."

"No. But you tell the owner of *The Purple Flash* that when the time comes for me to talk; when I have something to say, I promise to give you the first interview. But not now, not till I am sure."

CHAPTER V

The Recidivists

SIDNEY BIDDLE, alias Harry Ackerman, went back to his laboratory and worked and waited for two weeks. At the end of that time he received the reports promised by Hiram Smith. In addition, there were several preliminary reports concerning the Smith boy. It was all very interesting and made Biddle feel that he had every reason to be confident in his discovery.

But he was too much of a scientist to be a gambler. He knew that the experiment had to be repeated a hundred, a thousand, even a million times before the results could be taken as definite and conclusive. Yet, he was sure that the time had come for work on a large scale. He went to see the Governor of Ohio, a man who was so devoted to the interests of his people that he was lovingly called Welfare Watkins. The Executive listened for over an hour without interrupting, and then he said:

"I suppose you have had sufficient vision into this matter to understand what it means to the nation if you are correct?"

"I think so."

"It must be thought over very carefully. The consequences are so revolutionary that I am afraid I shall not sleep to night for thinking of them. Do you realize that with one step you are going to wipe out the employment of large masses of our citizens? Some of these groups have carried on an honorable existence for centuries. They will no longer be needed. Of course, taxes will be lowered at once, but unemployment will be increased. It is a complex subject. Perhaps we had better wait till your experiments show that you are absolutely correct. Of course, I will give you permission to go to our prison. In fact, I will go with you. The Warden is a fine fellow, but he has been a penologist so many years, that at times I am afraid he has ceased to remain a humanitarian. A personal command from me will be better than a letter. Have you enough of the medicine with you?"

"Yes. Seven hundred doses. I understand that the prison population is slightly over fourteen hundred. I wanted to hold half of them as control cases."

"We will go at once. I will tell my secretary to announce that I have left the state for Washington. We will make the trip to Farview in my personal airplane."

Two hours later a group of men sat in the Warden's office at Farview. It was composed of the Governor, the Inventor, the Warden, the prison Physician and the prison Chaplain. The Governor introduced Sidney Biddle as a scientist who wished to make an experiment on the prison population. He ended by asking the Warden to make a statement concerning his charges.

"Farview was built," the Warden replied, "to take care of the criminal who could not be reformed. There are fourteen hundred and thirty here at present, and we have room for twenty more. It is the only prison in America that is not overcrowded. The men average twenty-four years of age, a population of mere boys. Every one has had at least four convictions for felony or worse, and not a man here is up for less than

twenty years. Sixty-five percent are here for life. They have committed every crime known to the criminal records of mankind. Some of their crimes are absolutely new. You see that with the advent of the machine and the electrical age new ways of being bad developed, and that gave my boys an advantage, even over Nero. So far, we have never had a riot. We may have one the next hour."

"HOW is their health, Doctor Yardly?" asked Biddle.

"As good and as bad as would be expected. Syphilis, epilepsy, tuberculosis build up the death rate. A lot of them are insane or near it. You see, they have no hope, and that makes it hard for them to want to live. We try to make their life worth while, give them sports and talkies, but I guess that only adds to the mental irritation of their hopelessness."

"Their mental attitude is difficult to combat," interrupted the Chaplain. "You see, Mr. Biddle, they have been so poisoned by their past life that many of them have not only lost hope in the present but also in the future. A large number of them do not believe in a God."

The Governor frowned.

"In a way I do not blame them. Are your records up to date. Do you know your men, Warden?"

"I think so."

"Then, pick out seven hundred for Mr. Biddle. I suppose the mere giving of that many intravenous injections will not take long, but, at the same time, I think we had better call on the Department of Health for a few physicians to help. I am going to send in thirty-six men. They ought to be here to-morrow. Take care of them. I will have a stenographer for each man. One of my private secretaries will be here to organize the office force and help with the records. Let me see, I want twelve physicians, twelve psychiatrists, six lawyers, three hard-headed business men and three of the clergy from different denominations. Get me the Department of Health on the phone, also the State University. Do we need anyone else, Mr. Biddle?"

"There should be some psychologists, though most of that fraternity are so technical that I am afraid they will block the work: And there should be someone to take charge."

"I am going to do that," replied the Governor.

"Welfare Watkins," said the Warden, with a smile.

"I'LL take that for what it is worth, Warden," retorted the Governor, "and it may be that it is not very much. I am the Governor of this state and the people trust me. This experiment of Mr. Biddle's is too important for me to ignore. I will spend most of the month with you as your guest. Will you stay, Mr. Biddle?"

"No. Not after the seven hundred doses are given. I do not want to influence the findings of your experts in any way. All I want is a written opinion from you personally at the end of the month."

The Warden frowned,

"Just what do you expect, Mr. Biddle?" he asked.

"I will answer that question for him," interrupted the Governor. "He has talked this over with me and we are not going to tell anyone what he does expect. As far as you know it is simply a new treatment for ringworm of the feet. What we are going to do is to have a short concise record of these men, now, and a month after they have their injection. There will be a statement concerning each prisoner. Complete but concise. If a man is blind, I want a

short, non-technical statement as to why he is blind and the condition of his eyes at the end of thirty days. All you have to do, Warden, is to run this prison as you always have and furnish every possible help to these specialists."

"I shall have to have more guards. The prisoners won't understand it, and, whenever anything happens which they do not understand, they get ugly. I ought to have at least fifty additional men."

"O. K.", agreed the Governor. "You understand their psychology better than I do. Now, suppose we get busy. I want to go over your files with Mr. Biddle. There are some of these prisoners I am interested in and I want to get all of them on the list."

After three days of hard work Sidney Biddle left the prison. His part of the work was done. There was nothing to do but to wait for the results.

CHAPTER VI

Hiram Smith's Boy

BIDDLE went from Ohio back to New York. He wanted to see the newsboy and Sally the scrub, but changed his mind at the last moment and went right down into Wall Street to the office of Hiram Smith. There he was met by the usual obstacles confronting anyone who wants to see, without appointment, one of the financial overlords of America.

"Your name, please, and your business. Have you an appointment? Perhaps you had better fill out this card," purred the manicured and marcelled doll at the outer barricade.

The inventor smiled, and wrote on the card:

"You owe me something, but after all, not publicity. How is Junior? I should like to see him. Ackerman."

"See what happens," he advised the doll. "Better rush it through."

In less than a minute the Wolf himself came out, barking.

In less than another minute the two men were in the most private of all the private offices in the building.

"Well?" asked the inventor.

"I should say so!" laughed the Wolf. "You would not believe me, but the boy is actually walking, and using his hands. Of course, the specialists say that the impossible is happening, but, suppose it is? What difference does it make, so long as it happens? It is my opinion, though of course I am not a doctor, that in another two weeks he will be just as good as the average boy of his age. And you ought to see the wife. She is ten years younger. Wait till she sees you. Talk about a woman worshipping a man! I have had lots of cause for jealousy. Can you come out to the house? I hope you did not register at a hotel, but, if you did, it makes no difference. You can stay nowhere but with me."

"You seem to be excited over it?" laughed the scientist.

After all, he is my boy. Think of the mess I was in. Only son a hopeless cripple. Finest woman in the world my wife and actually thinking of divorcing her and marrying some other woman, just so I could have a real man-child, and then you come along and make a healthy, robust lad out of a twisted monstrosity. Of course I am excited. The last time I had him tested the psychologist told me the lad had an intelligence quotient of one hundred and thirty-five. And you ought to see him run, jump and learn to swim. Come on, and let's go. No more work for me today."

The two men went aboard the private speed boat that was the pride of the Wolf and which he used on his daily trips to the city. Thirty minutes up the

Hudson and they arrived at a wharf. From it they walked to the house. It was a Revolutionary Relic, hidden in a forest of oaks. Nearing the lawn they saw a man, a woman and a boy playing ball. The boy, recognizing Smith, came running.

"That's him," explained the Wolf. "Look at those legs! No wonder the orthopaedic surgeons were flabbergasted."

"Looks like a real boy to me!" exclaimed Biddle.

By this time the adults had caught up with the boy. Biddle looked at them. He felt he ought to know them, but, somehow, he could not identify them. The man smiled, and then he knew him.

"Harry Wild! And can this be Miss Fanning?"

"Call me Sally," cried the woman.

Biddle looked at the woman; a wonderful woman, beautiful, radiant, glowing with health, vitality, happiness. He looked at the man, as fine a man as any male would want to be .

"Are you really Harry and Sally?" he asked.

"None other," laughed the Wolf. "They are living out here with us. They meant too much to me to let them stay in the city. The other two are here also."

"And we are all well!" cried Sally.

"Well in every way!" agreed Harry.

"And the kid is doing fine. We are teaching him everything."

"You teaching him?" asked the inventor, doubting his ears.

"We are indeed. You see, something happened to our minds as well as our bodies. Of course, Harry and Mr. Jones knew a lot to start with, but Valencia and I never had much of a chance to learn; so, we are just reading all we can and it is no trouble at all to remember everything we read. You would be surprised if you knew just what the four of us are doing for you."

IT was not till after nine o'clock that the Wolf and the inventor were able to have an hour to themselves. Everybody was happy and excited. Mrs. Smith cried, but they all understood why. They all talked during dinner, all except Biddle. He just sat and listened and looked. He tried to remember the night he had invited these four to his bedroom and explained to them what he wanted. Were these four the same four? Jones did not look a day over thirty. Wild could have held his own as guard on a football team. Sally was lovely and Valencia charming, and they were both as fine young women as you could see anywhere. Sally always had been wonderful, but Valencia was now gold with all the dross burned out.

In the library the Wolf turned and faced his guest.

"You have something," he said. "What are you going to do with it?" he demanded.

Biddle threw out his hands in a hopeless gesture.

"I am not sure," he replied.

"You know what this means?"

"Partly. I have just come from Ohio. You have heard of the Governor, Welfare Watkins? He was good to me. I have just finished the injection of seven hundred recidivists, a group of men who would be considered hopeless by every known method of analysis. Watkins is in personal charge of the experiment. I am simply waiting till I see the results."

"Suppose the sick ones get well and those who are bad become good? What are you going to do about it?"

"What is there to do? What will Watkins do? Seven hundred sick men imprisoned for life become well in every-way? What is the answer?"

"My answer is this. If you can do it for seven hundred, you can do it for every criminal in the States. If you can do what you did for my boy, you can do it for every little child who needs it. *If you can cure Sally and Harry and Valencia and Jones, you can cure everyone who is sick. That is my answer. Can you? Are you going to? And how? What kind of machinery will you place in operation? You are going to change humanity. Before you do it, you must be sure of your control.*"

Biddle walked silently up and down the book-lined room.

"I am going to wait," he said at last, "till I have the monthly report from Farview Prison. If that is favorable, I am going to give a guarded statement to the Press."

"What paper?"

"The Purple Flash."

"You are true to your promise."

"How do you know?"

"I ought to know. I am the owner of the paper. My reporter told me what you had promised her. We are just waiting for your word and then we are going to have the greatest story any tabloid has every sprung. By the way, do you know what those four patients of yours are doing? They are writing a book; trying to imagine what the world would be like, if everyone was given a dose of your medicine. I am working on it with them at night. I give them ideas concerning business. Of course, so far, it is only a dream."

"Yes, just a dream."

The two men sat in silence. Suddenly the Wolf whispered,

"Have you given yourself a dose of the serum, Biddle?"

"No."

"Why not?"

"You see, I have a boy. That is what I have had in mind all these years. I wanted to do something for him some day, and it did not seem fair to let him go last."

"He—is sick? Like my boy?"

"Worse."

"And you were willing to help my boy first?"

"Yes. You see, I had to be sure. I could fail with others and keep working, have hope; but if I gave it to the boy and failed, I would have to stop."

"I UNDERSTAND. Well, you cannot stop. You have something that is so wonderful that it does not belong to you. Understand, I am not asking for anything for myself. I could sell that stuff for you at a million dollars a dose, serum you have been giving away to diseased convicts. But I am not doing that. I am not even asking for a dose for myself. You gave me a real son and I am yours to command for the rest of my life. But you have something in that serum that is dynamite. If it goes off at the wrong time it will devastate the world. And if it does not go off, it will rob the world of something the human race has a right to. Suppose you were killed?"

"Who is going to kill me?"

"The Doctors and the Lawyers ought to, but I suppose you are safe from them. They rank rather high. There are business men who are going to be wiped out, but I doubt if they would try to kill you. But how about the bootleggers and the underworld? Those who traffic in vice of every form? I have talked to Valencia. She knows all about that life, but now she is clean, clean as a hound's tooth. She says she deserves no credit for her reformation; she just decided suddenly that she did not want to be bad anymore. The criminal lawyers may smile when their living is taken away from them, but how about the criminals? And I am not sure of the

politicians? They fatten on vice; it is a source of their power."

"Let's wait," answered Biddle. "I want to be sure of myself and then I will have a message for the American people."

"Will they be ready for it?"

"That is a point well taken. Would it be best to take them into my confidence or to wait till the number of cures was so great that no one could doubt?"

"You cannot keep it a secret," declared the Wolf, with a twisted smile. "My reporters, who have been trying to cover the work in Ohio, tell me that there are two hundred reporters at the Farview Prison. If the Governor had not quarantined the place and called out the National Guard, they would have broken into jail to find out what was going on. So far, they cannot say anything, because they do not know anything. But when the Governor of a State goes into a prison for one month with a large staff of specialists, that's news, my son, that's news, and those reporters are going to do everything possible to find out what is going on."

"I guess we will let Welfare Watkins take care of that."

Hiram Smith went to the phone and called up the night editor of *The Purple Flash*. After listening carefully, he said,

"Watkins has told the newspapers that he has nothing to say."

CHAPTER VII

The Hunger Strike

SIDNEY BIDDLE decided to stay on as the guest of the Wolf of Wall Street. He wanted to think. Some of the questions Hiram Smith had asked were enough to make anyone think. Biddle was a scientist, not a sociologist, an inventor, not a financier. When he started his studies on a serum that would help mankind, he was thinking in terms of his son rather than in terms of the nation. His experiments up to this time had been devoted only to making sure of his discovery, rather than to help the human race in its toilsome staggerings towards the stars. The thought that it would revolutionize the life of the world was something new to him. He decided that he had to think it over.

His position in relation to his discovery was not unique. The first man to tame fire, Tubal Cain, hammering the first piece of red hot iron, the discoverer of gunpowder, of movable type, of the telescope; Newton, with his apple, Watts, with his steam kettle, Morse, with his telegraph, Wright, with his gliding machine, none of these had a clear consciousness of what his discovery would do to the life of the world. But those who were benefited knew. The man, warmed and protected by fire, by the iron tipped rod, the man, reading the first Bible, looking at the moon through two lenses, riding on a train, sending messages first over wire and then without wire, the man, chasing birds through the air; these men knew what the discovery meant. Sally Fanning, breathing lustily, Harry Wild, standing erect, Valencia Moore, cleansed from the desire to sin, John Jones, made young again, the crippled son of the Wolf, chasing rabbits through the woods; these had a far clearer vision of what had to happen in the world through the use of the serum than that of the man who had spent years perfecting it. And Hiram Smith, sensitized through years on the Stock Exchange, knew perfectly well what stocks would boom and what stocks would break when Wall Street heard the news. Already he had sold all of his holdings in the United

Drug Company, a ten million dollar concern he had helped organize.

Biddle wired his address to the Governor of Ohio, and spent the next week in long conversations with the guests of Hiram Smith. He was especially interested in talking to Mrs. Smith. She was a woman, college-educated, club-cultured and devoted, through the illness of her son, to charities for children of under-priviledged children. In her joy over the changed condition of her only child, she could not forget that there were other children who were warped, twisted and bent. She could not forget them, and she could not let the inventor forget. He listened to her pleading; he looked at the pictures of the little lads and lassies in the homes for the uncurables she was interested in.

"You are a peculiar inventor," she exclaimed. "Most of the breed I have met have made things out of metals, or devised new uses for electricity, but you work with living things, and, so far, you have not uttered a word or mentioned in any way the financial side of your undertaking. What are you doing it for? What are you going to gain from the development of your secret serum?"

Biddle simply smiled.

"I have a son," he replied. "I invented several processes and sold them. Now, I am spending that money. What is money anyway? What thing that is worth while can it buy for you! What good did your husband's wealth do you? In the end, the thing you were willing to pay millions for was given to you, like the sunshine, like the air you breathe!"

"Are you going to let the world enjoy it?"

"I do not know. Just now I am interested only in my son."

ON the evening of the eighth day of his visit he received a telegram from the Governor of Ohio, urging him to return to Farview Prison as soon as possible. No explanation was given. He showed the letter to Hiram Smith, who simply asked him for permission to take him to the prison by airplane.

"Something big must be happening there, and I want to go along and see what it is," he explained. "You know I am interested."

"The Governor might have something to say about your entering the prison."

"He might," agreed the Wolf, "if he knew who I was, but you can simply introduce me as your secretary, or a fellow-scientist or even your valet."

"O. K." agreed Biddle. "Let's start."

Morning found them at the prison. It was closely guarded by several companies of the National Guard. The few hotels of the neighboring town overflowed with newspaper men who were rapidly going insane over their inability to find out what was happening behind the mammoth granite walls of the prison. Biddle, once he was identified, had no trouble in entering and the Wolf went with him as his private secretary.

"What's wrong?" the scientist asked Welfare Watkins, as they met in the Warden's office. "Has the serum failed?"

The tired executive shook his head.

"On the contrary, it has succeeded too well. The change in the seven hundred who received the injection has been rapid and in every way satisfactory. Especially so to the men who were treated. Men who were almost dead from tuberculosis started to recover; syphilitics cleared mentally as well as physically. Every man developed a new viewpoint on life; they started to sing, whistle, laugh. The utterly vicious and hopelessly desperate changed almost overnight.

"The representative of the National Committee of Mental Hygiene told me that he had never seen anything like

the difference between the men before and after the serum. The specialists spent half their time saying that such changes could not happen to the human body and the other half finding new causes for astonishment.

"That part of it is all right. The serum has started to act in exactly the way you said it would. Not a single failure. But the news spread to the other half of the prison population. How? Don't ask me. But in a few days the other seven hundred knew that something great and wonderful was happening to their mates and not happening to them and they did not like it; and, in a way, I do not blame them. Suppose you were in the hospital of the prison, rotting to death, and in the next bed was a man as sick as you were and from the same disease? Suppose you saw that man recover, almost over night, and you just kept on dying? What if you remained hopeless and your cell mate hopeful? The men who received the serum gained the idea, I do not know how, that they were going to get well in every way and when they did, that I was going to pardon them. They were filled with hope.

"Naturally, the rest of the men wanted the same thing to happen to them. They were not sure what it was, but they knew it was something and they wanted it. So, they have gone on a hunger strike, seven hundred of them, and they swear they will not eat a bite till they get what they call fair play. So far, there has been no violence, but Hell is likely to break out at any moment. And the men who are getting well are sympathetic. They are saying that the medicine ought to be given to all of the prisoners."

"IF you are willing to do so, Governor," replied Biddle, "we will do that. It will not take long for me to get enough serum from my laboratories, and, with the physicians we have here, the work can be completed in a very few days. That ought to satisfy them."

"It will, and I think you had better send for the medicine. But I am afraid it will not satisfy others. We have five prisons in the State. And then there are the reporters. I am actually afraid to leave the prison. They feel that there is something big happening and they want the details. What can I say to them? And, if I say it, will they believe me? You have started something big, but how is it going to end? And what shall I do with these men after they have turned this prison into a paradise? Are they still guilty?"

"What does the Warden say, Governor?" asked Biddle.

"Of course, he is a penologist. He has looked on this type of human behavior as hopeless. Even now he says that they are suffering from some type of group hysteria, that in reality they are just as wicked and just as sick as they ever were."

"What do the physicians say?"

"They are talking their heads off and working twenty hours a day studying their pets. Each man has seen some impossible condition change for the better. One man was almost dead from cancer of the throat. From hour to hour they expected the disease to eat into a large blood-vessel and the man to bled to death. Now they say the man is going to recover. Of course, they say that occasionally a cancer will do that, but they feel that too many things like that are going on at the same time. First, they talked of coincidence, and now some of them are talking of omnipotence. They swear they are going to do something to you, torture you if necessary to make you tell them what it is you injected into the veins of these seven hundred degenerates. And something has to be done."

"We will do it. You announce to the prisoners that I am sending for some more medicine and that as soon as it comes every man will receive a dose, and the medicine will be the same and the dosage the same as was given to the other prisoners.

"YOU can tell the Doctors and specialists that at the proper time I will make an announcement to representatives of the ethical medical societies of the United States, and, when I do that, I will give the secret free to the nation. In the meantime, explain to them that they have had a wonderful opportunity to see the drug tested on over fourteen hundred cases, and that it would be a good idea if they would prepare a report to the American Medical Association, so that, when the time comes, that body of Physicians will not think that I am some kind of a charlatan.

"As far as the reporters are concerned, tell them that in twenty-four hours you will have a statement to make, giving them the bald facts of what has been going on in Farview Prison. I will help you prepare that statement. Now, I guess that ought to please everybody."

"But you said that it would take thirty days before the full effects of the drug could be observed."

"That is true. And we will not make any extravagant claims at this time."

"And you will send for the seven hundred doses at once?"

"Yes. My private secretary is here in his airplane. I will ask him to go to my laboratories, and have the drug rushed here. I will start him at once."

The Wolf of Wall Street had overheard all of the conversation. Biddle took him to one side, and gave him a Philadelphia address.

"You will have to take a letter there for me. They will give you the package and you can send it back by special messenger."

"But, how about me? I heard you promise to release the news to the papers in twenty--four hours."

"Well, what of it? I did not forget my promise. You have your plane. When you leave here, get to the nearest big city. Take over a private line and burn the news over to your city editor. Tell him anything you want to. Right at this minute you have, or at least I think you have, over twenty thousand words typed and ready for the press. In a few hours you can bring that news up to date, and have the special edition of *The Purple Flash* on the streets. You ought to have at least twenty hours lead on every other paper in the States. More than that, you have a rather clear idea of what it means. You can use all of your information except one thing, and that is my name. Now I will write the letter and you start. Better not let those boys outside the walls learn who you are. If they do, you will not get far."

"This is wonderful, Biddle," whispered the secret owner of *The Purple Flash*. "It will put my paper at the head of all of them and increase the circulation by five million. Could I speak to a few of these Doctors and sign them up for some future articles?"

"No. The last thing in the world I want is for them to find out who you are. All I want is for you to keep quiet for a little while."

Once Hiram Smith was safely up in the air Biddle returned to the Governor. He said,

"Suppose we start writing that statement for the papers?"

"I think that would be a good idea," assented the Executive. "What do you think we had better say?"

"Not too much and not too little. Something like this:

"For the last two weeks Governor

Watkins has been personally supervising the giving of a new form of medical treatment to all of the inmates of Farview Prison. The prisoners treated have been under the care of medical and sociological experts who at the end of thirty days will make a preliminary report. For the present all that can be said is that the health of the prisoners is excellent. One half of the prison population were treated two weeks ago and the other half will be treated in the next thirty-six hours. The Governor intends remaining at Farview till the expiration of thirty days, at which time he will permit the medical experts conducting the experiment to make whatever statement they wish. Till that time no statement not signed by the Governor can be considered trustworthy.

Signed Watkins.

"THAT ought to be satisfacory, Governor," said Biddle.

"Sure. Just enough to finish their insanity."

"Do you want to tell them the truth?"

"I would if I were sure, but suppose the Warden is right? What if they are not well, just think they are?"

Biddle shook his head.

"I think I know how you feel. I have used this serum on hundreds of animals. I saw its effect on five people in New York before I came to you. I think I know what it will do, but even now I am not sure. If I were sure, I would give a dose to my son. You see he is, well, not actually sick, but abnormal in some ways. I do not want to give it to him till I am sure. So, I am waiting. I hoped that after this prison experiment I could go ahead with him. Now if I feel that way, what is to keep you from doubting? Suppose we get something to eat and then spend the rest of the night seeing some of your cases? I want to talk with them, especially some of the psychopathic personalities and mental defectives. I am a little more interested in their minds and souls than I am in their bodies."

"You think they are going to change . . . that way?"

"Yes. The serum seems to work in any kind of sickness and, after all, a bad man is simply a sick man."

CHAPTER VIII

The Aroused Nation

WITHIN the next twenty-four hours *The Purple Flash* gave to the nation, and incidentally, to the world, the first of a series of articles on the new serum. The paper was being sold on the streets of New York one hour before the signed statement of the Governor of Ohio was handed to the impatient reporters surrounding the prison. They could each take that statement and embellish it as they saw fit but practically all they said was pure imagination. Meantime, the *Purple Flash* was giving to the world thousands of words, well written, and apparently so authentic that all of those who read were forced to believe.

There were millions, however, of American citizens who only had access to the twisted, garbled accounts written by reporters who had little but fancy to draw upon. Half truths are worse than whole lies and at once a tangled fiction spread, especially through Ohio, as to just what was going on at Farview Prison. A Chicago paper, driven to despair by the success of *The Purple Flash*, started to publish a series of articles in which the direct charge was made that Ohio, forced to balance its budget, was experimenting with a new form of euthanasia, whereby thousands of its

criminals, abnormals and defectives, would rapidly die and thus relieve the State of their financial care. The fact that many states were having difficulty in providing for their Welfare Departments made this appear plausible. In addition, the personal attendance of the Governor of Ohio, his secreting himself in Farview Prison for several weeks, his calling out the National Guard, his employment of additional prison guards, the use of medical experts, the definite secrecy, the quarantine, the peculiar and even somewhat ambiguous statement given to the press; all this could only mean one thing, and that was something so terrible that it could not be spoken of too strongly. Ohio was starting to free herself of the burden of life-care of the hopeless criminal class.

The Chicago Freepress, carefully avoiding the law of libel, became eloquent in its defense of the forgotten men, the lifers in the Ohio prisons. After all, they were human beings, made in the image of God. Though sentenced to life imprisonment, deprived of their citizenship, without homes, family or hope, they were still worthy of help.

The Freepress pointed out that if this condition was encouraged, there was nothing to prevent other states following the example of Ohio. It showed how much Illinois, New York, California could save by the immediate destruction of all of its criminals and abnormals. It asked whether there was any real difference between the slaughter of the Innocents at the time Christ was born and the slaughter of the criminals at a time when His teachings were being forgotten by a mob of politicians, driven to impotent fear by the mob of taxpayers at their heels.

In some way this paper obtained the names of the inmates of the Farview Penitentiary. It hunted up their relatives, the wives, mothers and children, of these men. The reporters told them that their beloved men were being killed in the name of science and then obtained their pictures and took their statements and recorded their tears. It made wonderful sob-stuff. Other papers followed the example of *The Freepress*.

Charges were made that *The Purple Flash* was being subsidized by the Ohio Governor to give a false account of the experiment in order to deceive the public. Soapbox orators addressed the unemployed on street corners. For a few days the issue tended to become a national one. Fraternal organizations paid the expense of the families of the criminals to Farview, where their hands, held at the wrists by agitators knocked without avail on the steel gates of the prison.

EVERYONE talked of the serum. Those, who knew the least about it, talked the most. It was discussed from the pulpit, the radio and the stage. Meanwhile, day after day, *The Purple Flash* continued its series of articles, which were so impossible that no one believed in them. At the same time, all read them.

At last the excitement became so great that the President of the United States determined that it was his duty, as the head of the nation, to make a personal investigation of the matter, and, irrespective of what the real truth was, to give it to a nation fast growing hysterical. Without parade, or publicity, he made the journey from Washington to Farview and was inside the walls of the prison twenty-four hours before the group of experts were ready to give their statement to the papers.

The first interview with Welfare Watkins took place behind closed doors in the Warden's office. Sidney Biddle was the third member of the conference.

"I suppose you know why I am here,"

[illegible] the President. "There has been [illegible] a hysteria shown over the news [illegible] Ohio that I felt it my duty to [illegible] here and make a personal inquiry. I trust, Governor, that you will not feel that I am doubting you and the work of your State, but . . . you have read the papers."

The Governor smiled at the President, as he replied:

"That's all right. No apologies are needed. If you had waited another day, my specialists would have given you their report, and when that report is given to the press some of the papers, especially those in Chicago, will be rather ashamed of the tommy-rot they have been feeding to the gullible public. There is only one thing we have been wrong with these convicts and that is curing them, restoring their health, apparently burning the evil from their personalities, making real men out of them. Have you read the articles in *The Purple Flash?*"

"I have. The terrible side of their method of deceiving the public is the fact that they are so well written that they seem to be the truth."

"Suppose we have Mr. Biddle answer that? You should understand, Mr. President, that Mr. Biddle is very much interested in this experiment. He knows more about it than anyone else. What do you think of the truth of the articles in the *Flash?*"

"The main facts are all true. Of course, the editors had no real scientific information concerning the composition of the serum used. Their guesses of the future use of the serum may seem to be science-fiction, but the premises are correct, and their conclusions may be actually correct. The secret owner of the *Flash* is vitally interested. His son was one of the first five human beings to receive the serum."

The President looked at Biddle in astonishment. At last he said, . . .

"There must be a mistake somewhere. My personal physician, Rear Admiral Stone, went over the account of those first five cases, and he told me, that no medicine could accomplish what was claimed for it in those five cases. He said that it would have to be a cure-all, a panacea."

"He should have said that there was no known medicine that could do it," was Biddle's calm reply. "But now that you are here, why not see the prisoners? The thirty day period will be up for half of them to-morrow and it has been about eighteen days since the other half received their serum. I suppose, Governor, that there will be no objection to the President's seeing the men?"

"None at all. Suppose I have them line up on the parade ground? I could have you interview the prison surgeon and the chaplain. I could have the various specialists and the psychologists tell you about the changes that have taken place in these fourteen hundred men, but I guess it will be best to have you see them as a group first. Do you know what the usual collection of life-term prisoners look like? Are you acquainted with the prison pallor? Can you identify the look of hopeless hate? the insane eye? the lustful cunning of the psychopath? do you know how a man feels when he knows that he will never leave a prison till he dies?"

"I have been in a good many prisons," acknowledged the President.

"Then you will be able to detect the difference between the average lot of prisoners and these men we are going to show you. I will give the order, the men will fall in, the band will start playing and the men will pass in review. We have done a lot of drilling lately; the men are feeling so well, that they are keen for all forms of exercise. I

will call the warden and in ten minutes we can go out and watch them. They have a setting up exercise that is especially fine. They strip to the waist for that."

FIFTEEN minutes later the reviewing party saw over fourteen hundred men pass in review, in perfect time, beautiful formation. They marched with the sure step and certain time of well drilled soldiers, and back of every movement was glorious health, the joy of being alive and well. Later they took off their coats and shirts and went through a complicated series of setting up exercises. The President broke his fifty minute silence,

"No prison pallor there!" he exclaimed. "Those men are sunburned athletes. Where are your sick men? the hospital cases?"

"That is not sunburn," replied Biddle. "For some reason not clear to me the serum turns the skin a beautiful golden tan. The two women I gave it to have the most wonderful complexion you ever saw. In regard to the sick men, those who were in the hospital dying from cancer, tuberculosis, syphilis, and every possible result of vicious living, they are all out on the parade ground. There has not been a death in the prison this month and at the present time there is not a single patient in the prison hospital. Physically, they are well."

The President shook his head,

"But the Chicago papers said that you were experimenting with a new form of euthenasia; that you were going to kill them?"

"Doesn't look like it, does it?" answered the Governor. "And these men are not only well physically, but there is a change mentally. Just wait till you hear the sociologists and psychologists and psychiatrists report on the changes in their mentality, their personality, their viewpoint on life, their moral sense. It raises a very serious question. Biddle and I have talked about it. We do not know what we ought to do with these men."

"They are all old offenders, are they not?"

"Yes. But suppose we show that they were sick when they broke the laws and that now they have recovered from their sickness and won't break any more laws? Shall they be punished for being sick?"

"I don't know," admitted the President. "But I want to talk to some of them. I want to see for myself, and I want to talk to some of the doctors who have spent the month here, and I think I want to talk with the warden. After that, if what appears true is true, I feel it my duty to issue a statement to the American people. Tell me one thing. Who discovered this remedy? Does the man know the full extent of its power? What is he going to charge for it? Can the nation buy it? Is there a chance that he will become worried over the publicity and go and sell it to a foreign power? How is he going to act? What? This man, Biddle, the inventor? Then I must talk to him first."

THE President of the United States was a man who was close to the common people. As far as the nation was concerned, he was as welfare-minded as was the Governor of Ohio. He was not an intense isolationist, but he did feel that the good of his people was more important than the good of a dozen nationalities of Europe and Asia. While he was not a socialist, he believed in equal opportunities for those who were equally adequate to profit by them.

During the three years he had served as President he had seen the national debt grow, taxes increase and unemployment become more prevalent. While

he had seen the convicts on parade he had been impressed by their glorious buoyancy, their apparent health. He knew, with a fair degree of accuracy, what the Federal prisons were costing the taxpayer, and, whatever may have been the route of his thinking, he rapidly reached the point where he saw that the wealth of the nation would have to improve with the health of the individual. The prevention of crime was secondary in his thought to the cure of diseases which, otherwise, were forcing the nation, the commonwealths and the large cities to spend an ever increasing percentage of their funds in hospitalization.

In the cure of hookworm, the fight against yellow fever, malaria, smallpox and tuberculosis, the nation had ever been active in association with various foundations. It was natural for the Chief Executive to feel that if a new drug, a startling medicine, a universal panacea was discovered, it should belong to the nation. Laws would have to be made for its use, a machinery devised for its distribution, in every way it would have to be protected and guarded against the efforts of the unscrupulous to commercialize it, to make its use possible only to the wealthy, the pampered favorites of fortune.

He wanted to talk to Biddle.

The result of that conference had ramifications neither dreamed of.

CHAPTER IX

Congress Changes

THE President worked at intense pressure for twelve hours and at the end of that time issued the following statement to the press:

"I wish to announce that I have personally made an investigation of the health programme of the State of Ohio as practised at Farview Prison, and feel that it has been to the definite advantage of all the inmates. All have been greatly benefited and nothing has happened to any of them that in any way can be considered as prejudicial to their health, happiness or future, should they at any time be pardoned and restored to their former citizenship.

Signed, *Richard Caldwell."*

And, exactly twelve hours after this statement was broadcast to the nation the general report of the specialists who had been observing the work of the serum was likewise released to the press. After that there was a rapid exodus from the Farview Prison of the experts, and the seal of secrecy being broken, a wide expression of universal opinion was given. These men were all specialists in their line, men who knew so much about a little, that some of them had reached the point where they knew everything about nothing. For thirty days they had lived in an atmosphere of the fantastic and impossible, they had seen the impossible happen, every belief of theirs shattered. It was almost necessary for them to reconstruct their scientific world. Under ordinary circumstances most of them would have doubted and remained silent, but now they had to talk, and, as talking was very profitable, they gave their opinions to the world.

The majority believed that the treatment was highly tonic, to a great degree stimulative and restorative, but it could not be anything permanent; the marked improvement could only be considered as a temporary change. Only the future could determine whether other doses of the serum would be equally potent. All felt that nothing but benefit had resulted from the first dose, but several raised the point that it might result in drug addiction. Would the

individual be able to live without a constantly increasing dose?

The President went back to Washington, met with his Cabinet and, as a result of that conference, invited one hundred of the leaders of American politics to come to Washington. This list included Senators, Representatives, Governors and Mayors of seven of the largest cities, and six of the silent advisers of the Administration. The selection was carefully made. Not a man was invited, who was not in absolute control of his district, and not one of the hundred was in good health. They ruled now, but in ten years the majority would be dead, merely historical names, fast passing into oblivion.

The invitation was carefully worded. The President invited them to meet him to consider a matter important to the economic welfare of the nation. Up to the time he began to address them, the majority of his guests believed that the subject to be discussed was purely of a financial nature. He lost no time in telling them the real reason.

The meeting was held in the Green Room of the White House. Present were the President, his Cabinet, the Vice President, the one hundred invited conferees and Biddle, the man of mystery.

"You have all been reading," began the President, "of the work done at Farview Prison, Ohio, by the Governor of that State. Over fourteen hundred prisoners were given a single dose of a serum and the effect on their general health and mentality was studied by a carefully selected corps of experts. As you know, I made a trip to Farview Prison and personally investigated this experiment. As a result, I conferred with the inventor of this serum, Mr. Biddle and secured from him a promise that he would neither perform any more mass experiments nor consider his discovery, till I had a chance to consider it from a national standpoint. It appears that the maximum improvement is reached in thirty days following the giving of the serum. My thought was that one month from to-day I would call a special session of Congress properly to provide for the control of this discovery, that is, if we can make satisfactory arrangements with its owner. Up to the present time every great discovery leading to improvement of the lives of our people has passed into the control of private corporations. Steam, electricity, the telegraph, telephone and radio are all controlled and operated by private capital.

Insulin was given to the diabetics of the world by its discoverers, but that is one of the few exceptions to the rule we are citing here.

"I am going to bring the entire problem to the attention of Congress. In the meantime, it is of importance to us, as leaders of national thought, to have a first-hand observation of the use of the new drug and its powers. Only by this method can we properly determine the matters pertaining to its universal use in our nation. I have invited you here, not only because you are leaders of your communities and can sway public opinion, but also because I have reason to feel that you are all sick men. My advisers tell me that few of the men in this room will be alive at the expiration of ten years. Thus you are admirable subjects for demonstrating the power of this drug. Mr. Biddle has everything ready to give all of you an intravenous injection. I am not offering you something I am afraid of myself; I am not asking you to do a thing I will not do."

End of Part I

The Lost City

By MILTON R. PERIL

CONCLUSION

This is the conclusion of "The Lost City." The story has been much admired and it holds its interest to the end. We are now in the midst of the rebellion in Atlantis, and the story draws to a very nice conclusion. The narration is full of action.

Illustrated by MOREY

CHAPTER XV

The Trick

THE girl was alert almost as soon as she opened her eyes. She eyed him askance.

"Venia, I have thought of something. It is our only chance."

She sat up quickly. Mansfield took from his hip the revolver and held it aloft.

"You've seen how this works, with what quickness I dispatch the blacks." He knocked it open and put new shells into it. "This"—he showed her the pressing of the trigger—"is how it works." Carefully he went into elaboration of the handling of the gun. And the highly developed mind of the girl understood readily.

"It is our only chance, Venia. The blacks have never seen anyone else but myself use it. They think that no one else can. That is shown by the way they took you right under my eyes. You are supposed to be harmless. What I am going to do is this: I am going to give it to you. Then I shall crouch beneath the panel. When they open it to see how we are faring, they will not be able to see me unless they lean out and look down. If they were to see me they would close that panel instantly. But after one look, if they don't find me, they will think that I have perished. Understand? I want the black to lean in! I'll take care of him. You are to press this trigger on any face that shows up near him."

The girl fell in with the plan with shining eyes. "But are you sure I can use this—this——"

He laughed exuberantly. "You can't help it. Just hold it tight and point it directly at the black head or body and pull that finger. Don't be frightened by the noise. All I want is just one black skull to come into the pit. Just one! Shoot anyone who tries to close the panel. Fear naught!"

It infused them both with new courage. They discussed it from all angles. "They are bound to open that panel some time," he told her. "It is the only way they can find out what we are doing, whether any of us have gone down—there."

THE girl stationed herself a little distance away from the closed opening. Mansfield crouched right under it. The girl was to keep the weapon from view, in case a black eye would alight upon it at the very beginning; then to

Mansfield saw with relief that the girl had sped up the stairs of the basement and he followed with long strides, firing backward at the heads which were bobbing out of the entrance.

use it swiftly. He was to keep his eyes on her, and, when she nodded, he would know that the hole had been opened.

They settled down to wait. It was only a matter of waiting. The panel would be opened some time. It seemed like hours to Mansfield as he slouched there; his knees were becoming numbed; but he didn't dare move for fear that it might be at that moment that the blacks would deem it the right time to open it. His eyes were glued on the face of the girl for some sign: her eyes were centered upon the closed portal.

Just when he felt that he would have to change his position or drop, there was a flicker in the girl's face. She nodded imperceptibly, the hand behind her tensing.

He looked up and saw that a square light was thrown against the wall. It was now or never! Were he to lose this chance it was a foregone conclusion he would never get another one. Even a black mind wouldn't fall for this simple trick twice in succession. Mansfield had accomplished it once before, but no black knew of that. That unfortunate fellow was now a dissolved thing somewhere at the bottom of the circular pit in which reposed the man-eating matter.

He heard a voice above him say:

"Look! The stranger has at last fallen into the pit! Good! The girl is crouched there yet!"

Several voices broke into a gleeful cheer in the ante-room. To Mansfield the sound of those throats meant that he would have to strike decisively. The element of surprise must not be lost. All of them must not be given time to coördinate their actions.

He saw Venia nod again. An outline of a blackish physiognomy shadowed the wall and then the full head was thrust forward, into the chamber.

Like a flash of lightning his arms moved up and fixed themselves around that neck. A heave, and the body was half way through. Bands of steel crushed the breath from the negro. He was at such a disadvantage that he couldn't bring his arms into play, and thus Mansfield held him, choking him into submission. And the Englishman saw, with a cheering glance, that so long as he kept the fellow half-in and half-out it would be impossible to close the panel.

A black face slipped closer to the opening; there was an upraised club and Venia moved in front of him and fired. He flopped backward into the remaining black who was right behind him.

"Quick!" she cried. "They are down. Release him."

Mansfield steadied himself and let sail the fellow. A hoarse howl of horror throated from him, but it was the last sound he ever made. He bounced out of view presently.

Mansfield lifted the girl and tossed her through the aperture, following with a bound that knocked him off his feet as he alighted right atop the fallen blacks. Immediately he was clenched with the rising negro who sunk his teeth into his ear. Venia huddled against the wall, watched entranced the flailing arms, the rippling muscles. Their freedom had been enacted within such a brief interval that she was momentarily stunned, the gun hanging limply from her fingers. But a gasp fell from her lips as she saw the huge paw of the black slowly forcing back Mansfield's head, and she plunged into them, pointing the muzzle of the weapon at the hideous head, pulling the trigger. The negro's head turned, his eyes wide open; his hands relaxed; he dropped on the ground.

The strange weapon, however, was too much for the girl of Atlantis. The supernatural ease and manner with which it dealt with the enemy was not lost upon

her, and awed her deeply. She fell back against the wall, the revolver slipping from her finger tips. Mansfield caught it as it fell, his hand touching hers. There was gratitude in his eyes. Her soft skin electrified him.

The next moment he had crushed her to him and was kissing her milk-white brow. She clung to him with her remaining strength, eagerly. It was the first manifestation of love Mansfield had ever shown to any bit of womanhood. But it had not its origin then. Many hours of fearful ordeals had they suffered together; many moments of trying hardships. These had molded them together.

Strangely enough, no blacks had come plowing into the chamber after all the shouting and noise. But Mansfield saw that the fellow Venia had first fired upon was now returning to consciousness. He sat up and looked stupidly at the two who stood over him, held a hand to a creased head from which blood was dripping. He cowered at the sight of the gun pointed at his breast.

Mansfield stood looking at him. A jubilant feeling came over him. It was indeed fortunate that Venia hadn't killed this fellow. He was injured enough to be incapable of fighting but he was becoming clear-minded to answer questions. And that was what was wanted now. From this black Mansfield could find out how to get out of the beastly hole.

He prodded him with the gun, with terrifying motions, and the black screamed. Perspiration was pouring down his face, eyes were distended.

"Do you want to die?" the scientist barked.

The huddling man shook his head violently, shrinking still farther away from the thing which catapulted death. "No! No!"

"You will die by this fire from the heaven if you don't reply to my question!"

The ebony face twitched. "I'll tell you anything!"

Mansfield glared at him. "How do you get out of here?"

The black man of Atlantis stared at him, eyes rolling, then pointed toward the door. But Mansfield jabbed the gun into his ribs with a suddenness that knocked him against the wall. The creature cried: "That way! That way!"

And he pointed directly through the panel of the pit of doom!

Sir John Mansfield's brow furrowed in surprise, in wonder. What was this fellow talking about, anyway? He smiled wryly.

"Sure, everybody goes out that way —for ever! And if you don't answer immediately, that's where you go!"

The black had great respect for the ever-shifting gun. His eyes were constantly upon its prowling mouth and when it came nearer to him he howled shudderingly.

"That way! That way!"

Something in the man's frightened face seemed to tell Mansfield that he wasn't lying. But he couldn't believe for a moment that the pit chamber was the outlet of this subterranean abode. It didn't sound reasonable.

He prodded the fellow toward the panel.

"Now get me, you scoundrel. Into that opening you go. Show me what you mean. What entrance are you talking about! And don't forget! One false move out of you and this"—he patted the gun—"will spit into you from any distance!"

The man nodded briskly, understandingly. He leaped with alacrity through the aperture into the pit of the man-eating matter. The way in which he jumped into it proved without a doubt to the scientist that there was some

way somewhere in there. The black had no fear of the grisly chamber.

The fellow walked cautiously around the precarious ledge and came at the opposite end to a blank slab. His fumbling fingers pressed something. Instantly a huge blackness showed behind a swinging rock. The black pointed.

Mansfield and Venia felt a tingling at the sight of the exit. It was the last place where they would ever expect it. And how ingenious it was! Any body of invaders could come rushing through it, only to be forced by their own momentum into the ghastly circular pit below. Nothing could stop them. It was a fine piece of black strategy, uncovered only through the fears of a black for a weapon which had him frightened stiff!

Mansfield lifted the girl through the panel and followed her. He grasped her hand and led her carefully around the ledge. The lighted pit in the center had little terror for them now. They were soon standing next to the palsied black.

At that moment there came a roar of human voices. Faces loomed in the panel opening and pointed and gesticulated toward them. They were shrieking frenziedly at the black who had broken his faith and had shown the two prisoners the precious exit from their hidden depth. Curses and more curses burst upon them.

Mansfield was thankful that the mob hadn't burst in upon them a few moments before. They would never have been able to overcome such numbers, or get through the paneled opening safely. And even as he watched he saw the foremost blacks clambering over into the chamber *via* the panel.

He poked the injured black. "Lead! And remember, one tricky move out of you and you go to join your fathers!"

Into the opening they ran, the howls of the pursuers splitting their ear-drums as they advanced.

CHAPTER XVI

The Escape

THE tunnel was as dark as night for a short distance, then from the walls there came that effulgence which was so commonplace in Atlantis. It lighted up the passage and Mansfield saw that the tunnel was about fifteen feet wide, giving enough room for a number of men to move along abreast. Then the footing became uncertain, as the stone floor shot upward at a sharp angle. It wasn't easy to sprint up this with speed.

The black, however, seemed not to mind the grade as he ran before them, his feet carrying him swiftly, until he was a good distance ahead of the hurrying pair. Mansfield let out a yell which halted him dead in his tracks and brought him scurrying back. The scientist couldn't afford to lose this black now. On him they depended upon all of their freedom. He, and he alone, knew where they were going. And the way he tried to outpace them and lose them showed his anxiety of getting out of the range of the gun which Mansfield now held.

Up and up they ran. Behind them they could hear the steadily rising voices of the blacks. If those fellows ran as fast as the black in front of them, they would soon overtake them. They were probably used to this; he and Venia were not. And there was immediate danger of slipping and falling. His boots were not made to fly over this sharp stone incline. They were constantly skidding from under him.

It was with a glad cry that he saw the walls of the tunnel coming together. And soon they were gliding between a space where he could reach out with outstretched arms and touch both sides at one time. That meant much, right

now. It wouldn't prevent a horde from coming upon them from the rear at one time. The pursuers would have to move up in double file, at the most.

Mansfield ran immediately behind the daughter of the high priest. He marveled at the agility with which those slender legs carried her ahead. She was like a breath of wind now; every moment seemed to give her new strength. Her chest rose and fell without strain. She had adapted herself to the situation with a vim!

He glanced behind him and saw the foremost of the blacks running swiftly, his club held like a feather in his hands. It roused the fury in the black face as Mansfield looked back. He lifted his burly stick and swung it viciously.

There came a bend in the tunnel and the black ahead flitted around it, Venia following. Mansfield came to a sudden halt, whirled and fired. The black let out a shriek of pain and plunged through the air, to fall with a crunch that sounded like snapping bones. The body turned over and over, and the scientist's eye, just as he was disappearing around the turn, caught the rushing blacks bowling into the prone figure and piling upon each other, blocking up the passage.

The pause would help them a lot, he knew. They couldn't go on running like this all day. The blacks were far swifter than they. The underground channel had to lead somewhere and end sometime. He caught sight of the girl ahead, running smoothly; and the black, his feet animated by the sound of the loathesome gun, put on another burst of speed.

Far behind him came the resumption of the pursuit. They were on the trail once more, detained no longer by the body of the black leader. The scientist, panting from the exertion, caught up with the girl and pattered behind her. He saw the black slow down and come to a stop. All three of them stopped in their tracks to keep from bumping into each other. They had come to the end of the tunnel!

FIGURES were appearing at the other end of the passage, around that bend, accompanied by outbursts that sent them, baffled by a blank wall, into anxious haste.

"Quick," Mansfield commanded the black. "Open it up."

The fellow eyed those of his own ilk who were tearing up the narrow, lighted path. He hesitated for a moment. But only for a moment, for the scientist wasn't fooling with him now. He slammed the negro against the wall with one hand, and with the other fired the gun, nipping the black's ear.

The fellow's eyes were crazed with fear. He cried and sobbed and begged, seeing death staring him in the face. Not more than seventy-five feet away were the howling blacks. Mansfield gave them a swift glance, jerked the negro back to his feet with a prod in the stomach that almost doubled him up.

The black fingers dived for the wall, met a small dent. Instantly the primary rock fell backward, and Mansfield found himself looking into the littered cellar in which he had once gone searching around. He uttered a cry of delight, shoving the girl recklessly through the opening, whirling just in time to face the nearest black ten feet away who was bounding with upraised club!

He didn't hesitate. The revolver spurted flame; the impetus carried the victim on, to drop him two feet away from the Englishman, the club bouncing past Mansfield and through the opening! The closest black had been dealt with!

The ebony men set up a terrific din as they saw their quarry dive through the portal and disappear. They dived

after him with murder in their eyes, to meet the cracking of the gun. Nothing could keep them back. They were insane for white blood, they were hellishly crazed for the feeling of white skin beneath their tearing hands.

Mansfield saw with relief that the girl had sped up the stairs of the basement and he followed with long strides, firing backward at the heads which were bobbing out of the entrance.

But his part in the affair was over. Rushing down the steps came the white men of Atlantis, swinging their ray cylinders, like heavy bludgeons, instead of with the slow paralyzing cylinders. The two bodies of men met fiercely, though the whites were vastly superior in numbers.

Out on the plain Mansfield saw Venia in the arms of her father. He was holding her close as though never to let her go. Men were grouped about them, sending up cheer after cheer. They piled around the torn and disheveled stranger like a brother long-lost. Hands patted him on the shoulder. Everybody wanted to touch him, to praise him.

The high priest took the scientist by the arm.

"Sir John, we searched long for you and Venia and were on the verge of giving up. We were just about ready to leave in force, when we heard those loud crashes of your weapon. May the gods heap upon your divine head their benign favors."

THERE was a kindness and warmth from Yuxa which abashed Mansfield. The haughty eyes were humbling themselves before him. The high priest held the form of his daughter tightly, gripping the arm of the stranger with the other hand.

Behind them still continued the noise of the fighting, but it was dying out. The vehement voices of the blacks were thinning out as more and more of the whites tore down into the cellar to throw themselves into the thick of it. Mansfield looked around him and saw that a vast army of white men were assembled, waiting for some official word to be heard, now that they had discovered the entrance to the black underground pits. But the Englisman turned to the high priest.

"Yuxa, call back your men. Do not let them go through the tunnel."

The leader of the whites gazed at him inquiringly. "Why?"

Rapidly he told of the precarious footing which was afforded down the passageway which led into the pit of doom. There was not enough room there to begin hand-to-hand engagement save for several men. And the pit of the man-eating plant was all against them. Even if they succeeded in getting into it, there wasn't any way of getting through unless through the panel. And a whole army of men couldn't get through that at one time. The blacks had the decided advantage any way one looked at it. They could pick off their assailants one at a time.

But it was an advantage to the whites too, Mansfield pointed out. The blacks couldn't get out either. The logic of it struck home with the high priest immediately. Immediately the officers were giving the men the order to recede, leaving but a handful of whites to guard the entrance to the cellar.

"Some other means must be had," Mansfield advised them, and then it came to him—the solution. He pulled Yuxa close and told him. "It will take time but it is the best way. Start immediately and dig a half dozen tunnels underground, underneath the wall of the man-eating plant, and have these tunnels break into the corridors of the blacks all at one time. In that way you all can pile into them at once."

The city of Atlantis fêted the stranger as no city ever fêted a victor before. Women, tall and beautiful, twined their arms around him, as he strode along and kissed him unreservedly and unashamedly. His embarrassment rose when the men, too, threw their arms about him and pressed their kisses of undying friendship upon his brow. It was a custom which they now imbibed to their fullest—and to the Englishman's dismay and horror. And occasionally he glanced back to see Yuxa smiling upon him and Venia's rapt eyes centered upon his face. His dirty and torn garments were a pitiable sight in his own eyes, but they seemed to be a handsome shroud of victory to them all.

Handsome children, straight as arrows, clambered between his knees and he had to reach down and drag them to his shoulders. It was a constant cheer that burst from their throats. Never had he remotely realized that some day he might be received like this anywhere, let alone in a strange land which had never had the light of day, the breath of anything but a self-manufactured atmosphere.

It was the first time he really saw Atlantis for what it was. The picture remained with him forever—women, like Venia, with a superbness of grace and body that was dream-like in aspect; men with a warmth of character and heart that had existed only in theory and fancy. Far and away stretched the great city, brilliant lights of every hue; myriads of rays flashed across the subterranean sky, a gorgeous spectrum of color.

WORK was halted at every depth. Every black vassal came to the top to gorge himself with the huge platters of food which appeared from everywhere, to drink from the deep urns of the exhilarating liquids. The return of the daughter of the high priest, safe and sound, was an occasion of merriment and glee.

Mansfield had been separated from the company of Venia and her parent. He had permitted himself to be led from group to group and to recount over and over again his magical escapes from the horrifying pit of doom. The thing had never happened before. Shudders were plainly evident, blue eyes gaped awedly upon him. He was an object of fascination.

But he was now tired of this aimless feasting. He wanted more and more to see Venia again, to look at her, to feel her soft hand in his. Finding his opportunity, he dived into a ground portal of the huge temple and disappeared. The hallways seemed dolefully bare and empty as he walked briskly upward. He felt now that he could find the upper chambers of the high priest. He wanted to see Venia. He wanted to be alone with the girl. The memory of that all-too-brief moment in the anteroom of the man-eating pit chamber with Venia in his arms blotted out all this rejoicing. He wanted to rejoice with someone else with her.

Swiftly he went up and up, turning into corridor after corridor, and after a time he discovered to his chagrin that he actually knew little of the temple. Every hall passage was similar in aspect to the next one, and though he halted occasionally and entered sliding panels, he found himself in unfamiliar and empty rooms. During ordinary times, there would have been somebody going or coming and he would have been put upon the proper path, but they were all down below now, singing and making merry. He roamed the corridors until he knew eventually that he was lost.

At the far end he saw a lounge against the wall and he sat down and scratched his head. He'd stay around

until someone came by and then get his bearings. Then he bolted upright! Someone was speaking to him!

"You are an inspired man, Sir John Mansfield. You are truly gifted!"

It was the loud, raucous voice! The mystery of that entity had been torn from his mind by the rapidly ensuing events, and he had completely forgotten about it. But now it sounded all around him, speaking with candor and directness at him!

He leaped to his feet and stared with narrowed eyes at the walls. Where was this thing coming from? What uttered those words in such an insipid tone?

CHAPTER XVII

The Shocking Discovery

MANSFIELD'S flicking and penetrative glances saw a portal at the other end of the corridor open and a figure emerge, gazing around for some answer to the sound heard. It was Yuxa, and he immediately made for him, pattering down the heavily rugged floor. The high priest saw him coming and greeted him. Behind him, through the opened panel, the scientist saw the girl.

Yuxa approached him and laid his arm around him with utmost affection.

"Venia has told me everything—my son!"

They entered the room. The girl was attired in fresh garments, a new robe reaching to her knees, and a resplendent tiara which encircled her blonde head like a halo. Mansfield took her in his arms and kissed her.

"May Ra bless you, my children!" the high priest said, with an effusive expression in his eyes.

Suddenly Venia's head fell from his shoulder and bowed. The voice was speaking again!

"Conduct the ritual of victory to Ra in the holy chamber Yuxa."

Mansfield was angry. Decidedly angry! His blood cavorted madly at the sound of that voice. What beastly right had it to break him from the ecstatic feeling of holding the daughter of the high priest in his arms? It was the voice of a confounded old rascal, that's what it was! His mind tensed with the unuttered desire. He'd find out the source of that thing before many hours were over! He'd drag it all over the floor for the white men to see what sort of Ra was using them in ridiculous subjection. Yes—he'd—— But, confound it, that voice had spoken for ages! *What was this?*

YUXA stood in reverent position for a moment, then quit the room. Venia went to the wall and opened a large portion of it, giving a wide view of the bustling throng below. She leaned out with him at her side. The men and women below caught a glimpse of them and burst into hailing cries. Their arms flung upward in commendatory gestures, their throats yelling themselves hoarse.

The figure of the high priest appeared and all became still. Soon there was a steady flow into the temple, up to the chamber of the supreme deity of Atlantis, the god worshipped by the ancient Egyptians, and later supplanted in the faith of the men of Atlantis by that ancient character, Cheops. The victory ritual was a holy one.

The two stood next to each other, looking down. Presently there were but a few left below, those on guard.

"Come, Sir John. We must go now."

The chamber of Ra was a vast amphitheater with a huge golden throne near the dais. Mansfield, entering the room from a corner near the altar, recalled the time he had gone through it

with Yuxa. And he distinctly remembered that the high priest had told him that the delicately carved seat had never contained any living person; that it was the recipient of Ra at all times.

The place was peculiarly quiet, for all of the many people seated and yet to be seated. All heads were held in respectful posture. Gone was the exuberance manifested but a short time before. The religious ritual in the chamber of the great god was too holy a one.

The high priest entered presently and came quickly up the rugged aisle to the altar. He was now clad in a long garment which brushed the floor, but his head was bare. It was nothing like those religious displays of the blacks, where a hideous and horrifying face was used to affect and move the assembled crowd.

Mansfield found himself sitting next to Venia, on a small, backless bench in front of Yuxa and a short distance away from the golden throne, that dull, glistening thing which squatted near the shrine. The Englishman concentrated his gaze upon the seat of precious metal, the chair into which no one had ever dropped. The legs seemed rooted to the floor, strong and well-rounded. That throne of Ra would find an open welcome in any museum, he mused.

The voices about him broke into a soft, purring incantation of one pitch. It was a plea for righteous life, and reward after death; for happiness to continue and to enter into their mode of existence. It was a hearty and true expression that came from them. They meant every word they said.

BUT this was only the preliminary prayer, he discovered. The real one, the victory ritual, came later. And what an ear-splitting din it was! Even to the sense of the supposedly listening god it was considered as a holy gesture. Every person rose to his feet and threw up the arms in a plea. The lungs took deep breaths, the voices suddenly breaking into a growing shriek that continued until all air was spent, following which they abruptly sat down. That was the victory ritual!

It was all highly interesting to the scientist. He missed nothing, however irrelevant it might appear. The victory ritual to the god Ra had been offered since time immemorial. The ancient Egyptians returned from a slain foe with hailing cries. This, to which he had just listened, was a perfect replica of the one of thousands of years ago!

Ra, to the Egyptians, was a combination of the majesties studding the wide, spacious heaven. But to Atlantis the meaning of the sun or moon was only historical, something none had ever seen. But those living knew, however, that such did exist.

Mansfield glanced around at the tapestries for some symbol which might explain the shape of Ra. Generally a god was caricatured in some form or fashion. But the garbed walls were bare of anything to that effect. Only the golden chair seemed symbolic of something. There was some sort of inscription upon the legs and arms.

Then, like a thunderclap, there came upon the assembly a noise like a cough. And another. Everybody sat immobile, expectant. The voice spread over them and all heads bowed.

"High priest of Atlantis, your victory ritual has reached the ears of Ra! And, for the first time in the history of Atlantis, there shall be an ascendence to the heaven! Seat the heroic stranger upon the chair of Ra!"

There was a sharp and breathless halt. Mansfield's heart was pounding. Venia, for the first time in her life, broke away from the respectful bow which held her drooping head and raised it frantically,

looking at him. Her eyes were terrorized. Such a thing had never occurred before in the annals of the underground land—the seating of anyone upon the throne of holiness, the seat of Ra! None knew what would be incurred by that act. There was a fear which leaped from her beautiful eyes, an apprehension which the Englishman did not miss.

Sir John Mansfield's eyes were clouded. Was this a trick of some sort? Perhaps the blacks were behind this, and they now saw their opportunity of doing away with him! But no! How could the ebony creatures have got away with this farce for so many ages? It hardly seemed possible.

YET, there was something here which forced itself upon the white man. Something that he ridiculed as not being of supernatural and godly potency. There couldn't be anything like that! He wanted badly to uncover it, and what better time was to be had than now? The solution lay within his grasp. He was going to sit down in that golden throne and await the consequences. Something would probably happen. And he intended to solve it all. If there were danger imminent, that contingency was to be met somehow. But right now he must go through with it.

With a soothing shake of the head he calmed the girl, and her tremulous countenance turned from him to stare ahead. He rose to his feet, every head looking at him unblinkingly, and moved toward the throne. Standing before it for a moment he studied intently the construction, but perceived nothing which might arouse his suspicions. Everything appeared forward and innocent.

He sat down abruptly! A silence that could have been cut with a knife held everybody transfixed. But nothing happened!

Sitting in the seat was nothing extraordinary. It was similar to any other repose. Hard and not any too comfortable. He glanced about him, observing the faces focused upon him. Then the voice spoke again with finality, upon trembling, twitching nerves.

"Look upon the courageous man, men of Atlantis! He goes now!"

Mansfield had no time to prepare himself for what followed. He was thrown back into the chair and he clung hard to the arms, as a sudden blinding flash enveloped the entire dais and the spot where the chair was placed. A stinging sensation smarted his eyes, and he began to cough. As though from a distance, he heard the scream of a girl and knew that it was Venia.

The cloud hung thickly over him, obstructing all vision. He shook his head to clear it. Suddenly he felt himself rising swiftly! He knew that the chair was going straight up with him, for his arms were leaning heavily on the golden arms of the seat. His stomach felt hollow from the spurt upward!

Was it really shooting into heaven? he tried to ask himself in amazement. This soaring up and up, what was it? What unearthly power made it ascend? It couldn't be supernatural, he told himself. He was a scientist, cold and penetrative. And that realization made him shudder. He felt now that he had it! He was going to be smashed against the stone ceiling, flattened into a lifeless form! That was it! Someone was going to get rid of him!

But nothing like that happened. His head suddenly shot into a brilliant light that relieved his smarting eyes, but dazzled him so that he couldn't see anything for a while. He stopped coughing and sputtering. Something tore him from the chair and threw him upon a soft bed, stunning him but momentarily.

His eyes gradually became used to the

light and he gazed around him. The intensity of the illumination was thinning out.

"HERE!" A thin voice was speaking to him. To his ringing ears it sounded very much similar to that raucous voice. He whirled, sprang to his feet.

There, sitting before a great table upon which a luminous light fell in brilliant lances, was a small wizened figure, whose body was dried and thin. He was hairless, his face accentuated by high cheekbones, and the only thing he wore was a metallic girdle of sparkling color.

The figure radiated an *aura* of untold age. Even as Mansfield looked fascinatedly at him, he could feel those eyes bearing the weight of many centuries. The thin face bore the semblance of a smile. Was this that heavenly entity, Ra? And was this—was this heaven?

"Who are you?" Mansfield demanded in a queer tone.

The other pointed at the table before him and beckoned. "Come here."

Mansfield strode over and gazed upon the flat top. It was some sort of reflector, lined off into sections. His eyes looked eagerly. The old man was pointing to a square of large dimensions. Tiny dots were spotting the glass. He turned a knob and the section leaped into huge proportions. Staring back at Mansfield was a lucid picture of the chamber of Ra, the one he had just quit forcibly!

The Englishman saw the impassive faces staring at the cloud which still hung around the altar, saw Venia standing near her father with her hand clamped over her mouth. Then the mist cleared away and he could see the golden throne sitting there as it had always sat. And of course it was empty.

The girl stared at the great throne with distorted eyes, then slumped forward, to be caught by the high priest and carried from the room. The ritual was over. All filed out with heads hanging.

MANSFIELD whirled upon the old fellow, who sat with orbs fixed upon the glass.

"Who are you? What is this magic with which you cower these men?"

"You are staring at Ra——"

Mansfield exclaimed, "Bosh! What rascality are you up to here?"

The spontaneous and impulsive stranger never lost the whimsical smile on the emaciated face.

"You are a clever man, Sir John Mansfield. No use deceiving you. Pray sit down and refresh yourself by relaxing. You are overwrought."

But Mansfield was not to be forced into a seat. With demanding tone he asked again, "Who are you?"

The eyes of the old man stared at him eagerly, looking right through him.

"You demand, Sir John. Are you really interested?"

Mansfield's breath was coming faster now. He couldn't diagnose that creepy feeling which was quivering down his spine. He nodded his head.

Those deep, awfully deep eyes smiled at him. The bald head bent forward.

"I am Cheops!"

CHAPTER XVIII

The Flame of Life

QUITE a little while later. Sir John Mansfield found himself sitting in a chair with mouth agape, staring unbelievingly at the amused countenance of the other.

"'Cheops! Cheops! The Egyptian king!" he murmured. "He died five

thousand years ago. This fellow must be an imposter! Cheops! There is no . . . What is the matter with me, anyway?"

And, indeed, it seemed very probable that he was out of his mind. Had he been able to see his own face at that moment he would have been alarmed at its colorless pastiness. He couldn't shut his mouth; it was open wide enough to stick two closed fists into it. He couldn't think straight.

An old, bony arm extended toward him. "Come, come, my good man! Pull yourself together!"

The sound of the other's voice did more than anything else to wipe off that impossible silliness. Mansfield took a deep breath and glared around him. A burst of dismay, of utter wonder, came from him. Right to the side of him was a transparent wall through which he could see the entire city of Atlantis, and, down below, there issued from the floor of the temple orderly throngs of men and women. They were the ones who had left the chamber of Ra shortly before!

He didn't understand this. Where he sat now was somewhere at the top of the temple. Probably on the top. And he could look down and see everyone. The glass was in clear view of those below. Yet not one of those heads which occasionally glanced upward to the top of the edifice ever showed surprise or notice of it. He, Mansfield, had taken in every line of the temple when he had returned from the black land beyond the man-eating plant, and he was positive that there had been nothing like this above the holy building. It had been a blank wall at this point—of that he was sure. What miracle was this?

HIS roving mind clicked back to the fellow who called himself Cheops. He surveyed him from head to foot. He was the most shriveled, living mummy he had ever seen. Save for those brilliant, profound eyes, which were like a burbling pool of age-old wisdom and lore, he would hardly have seemed to possess animation. Yet, there stood the paradox!

He whispered awedly: "Tell me, why do you call yourself Cheops? Are you a descendant of the famous Egyptian dynasty of that name?"

The fellow laughed—a metallic, dead sound.

"No! I am not a descendent! I am Cheops, the man who has lived almost five thousand turns by that instrument"—he pointed near the wall and Mansfield saw a slowly revolving globe which resembled the earth, turning upon an axis.

Above it were suspended in the air two balls of some metal which defied gravity. They, also, moved in imperceptible rotation.

The English scientist inspected it closely, while the old fellow continued to explain the working of the instrument. The globe was girdled by a strip of metal the same as that of which the two balls which floated, were composed. He could see that the orbits were similar to those of the sun and moon, and that the earth turned once fully to represent the passing of a day. Three hundred and sixty-five turns in one entire revolution designated a fully completed year. That much Mansfield discovered from the man who called himself Cheops. The instrument was a very ingenious piece! But that could wait. It was this shrunken thing of a human, who interested him the most at the moment.

He stared at him long, speculatively. He was old. But no man could live that long. Cheops or anyone else! There were thousands of questions that he wanted to ask, to make the other talk

about himself. What was this that seemed so elusively mysterious? He didn't want to term him an absolute liar, without having the facts before him. And yet he wanted to believe this man before him. That strange feeling which was rippling through him wasn't without import. He had felt it before, even though his mind wouldn't hold faith or believe, and he had found out differently.

The old man seemed to read his thoughts. His eyes narrowed as if concentrating inwardly, then he spoke.

"I will tell you, Sir John Mansfield. I fully realize your puzzled and unbelieving mien. I am Cheops. The original Cheops. Rest your mind on that point.

"You found the papyrus manuscript which I wrote ages ago. Thus you understand how I became acquainted with the existence of Atlantis. But it was more than that. I found the men of learning here to be so greatly developed that my pithy scientists were but foolish men in Egypt. I discovered that one of them had concocted a flame which would recreate the physical cells of the human body without the necessity of the subsistence upon food and water. That was the greatest creation of any human mind. It was the fountain of eternal life! But I shall show you later! . . .

"FROM the first glance into this extraordinary land, I completely forgot my own. I arranged finally to have my supposed body buried in a tomb, but it was only that of a slave. That necessary passing wiped from the minds of my people the life of Cheops. And that was what I had wanted. I had built in the meantime many pyramids and monuments so as to hide the true meaning of the Great Sphinx. You know its purpose.

"The men of Atlantis—I speak of the whites—are of much beneficence of mind and heart. So were their fathers. They accepted me as one of their own. And puttering around with their men of science and seeing how I could live forever, I took in hand the formula of the flame of life. This abode, I am at present in, can never be discovered. The matter which envelops it is of transparent substance which yields to no pressure. None can look in or see it, it is so impenetrable, but I within it am not handicapped in any way by it. That is why you can see everything going on below and no one there will be the wiser.

"Here, look at the table before you. It is partitioned off into sections, perceive? Those sections correspond to every chamber in this temple, and those strips are the underground dungeons and corridors. I can communicate at any time with any one of them simply by moving this knob which brings it to large relief. In every room and corridor are placed tiny but superpowerful bulbs which absorb every irradiation, both physical and inanimate. They are reflectors. My voice is carried through this tube here to each room, through thin slits in the four corners which are powerful amplifying devices. I will get you the chamber of the high priest and Venia, to explain to you the better."

His index finger fell upon a rectangular square in which were two moving dots, and he turned the knob near-by. Immediately the square loomed large, and Mansfield observed the chamber in which he had first awakened in Atlantis, saw the forms of Venia and Yuxa quite distinctly.

The girl was standing over a table, listlessly; Yuxa was pacing the room, a sad expression upon his countenance. Cheops turned another knob and spoke into the tube. Instantly both the high

priest and his daughter straightened and lowered their heads in reverence. Gradually the picture bulged until Mansfield felt that he could almost reach out and touch the pair, so close were they.

"Fear not," Cheops said to them. "Sir John Mansfield is safe and contented. He shall speak to you."

The scientist took the speaking tube, eyes rapt upon the heaving breast of the girl. He spoke.

"Yuxa and Venia! Be assured that I am safe! Happy I am!"

The girl whirled at the sound of his voice, and Mansfield saw her big blue eyes shine, a beautiful smile upon her lovely face. The high priest relaxed, the lines in his face disappearing.

And then Cheops turned the knob again and the picture was shut off, to flicker down to two small, moving dots again.

"Do you see and believe?" And he smiled at the stranger to Atlantis.

MANSFIELD felt a heavy weight taken from him. The sight of the girl made him feel light and susceptible to anything now. He began to see what spell Venia had put upon him; what yearning she had cast into his hitherto impassive heart, the stony heart of an old and worldly scientist. He grinned at Cheops youthfully.

The emaciated man continued: "As I have told you already, I do not need food. Haven't taken anything through my mouth for thousands of years. The flame of life supplies everything for the metabolistic progress of my body."

Mansfield dropped into the chair and extended his legs with a sigh. Everything had flashed upon him in meteoric kaleidoscope and he hadn't had time to digest them all. He had discovered the land of Atlantis. That in itself was a finding that should eclipse everything else. But it was nothing compared to the solution of the mystery of the raucous voice! No stretch of the imagination could ever have foreseen this!

For a long while he conversed with Cheops, replying to the questions which the other bombarded him with incessantly; what the greatness was of the people who lived now over the landscapes of the planet, the forms of government, the means of sustaining life, what the precious metal, gold, meant as a medium of barter and exchange; the wireless, the airplane. Cheops kept shaking his head, understanding them not. His brow creased enigmatically.

The withered man rudely interrupted him by springing to his feet.

"Come! It is time I must bathe in the flame of life again!"

Mansfield rose, trying to conceal his eagerness. His mind was exceptionally clear now. This was what he was waiting for. His scientific process of reasoning was back in full. Now he would be able to see what this mastery of life was; whether this man really was Cheops. It would corroborate his far-fetched statements, if they were true.

Cheops touched a slightly elevated spot and the transparent wall slid back. They were in a room which was very small. On the four sides were packed four long metallic cones with covers upon them. The little man went to each and threw back the cover. A reddish substance was in them. He caressed it with a gentle hand.

"This is my god! There is none other! It gives me the power to live as long as Time! It is my flame of everlasting life!"

HE stood in the middle of the room and kicked a foot switch. Instantly from the four sides there glowed a strange efflorescence, a cold light of red and blue. The radiation came to-

gether and suffused the small chamber. It was a scintillating blend.

Cheops tore loose the girdle from his body and fell into the very center of the effluvia. His body took on a brilliant color, as though he were being roasted alive, but his eyes distended with a sensual gratification, an enjoyment of every sensation known to man. His arms fell back, his body limp, and he hung in the air, quivering perceptibly.

To this day Mansfield never knew what happened to him. He could never describe the feelings which went through him. The only thing he remembered after getting into the middle of the room, into the thick of the emanation, was that his eyes couldn't see anything but that his body was *feeling, feeling!* There surged through him a ripping of something that he didn't mind in the least, and he wanted—oh, so badly—to just lie back and sleep on forever and ever!

How long he was in this coma he couldn't tell. But there rose presently to his senses a feeling of satiation, and he felt that he had had enough. His body was pliant as it had seldom if ever been before; it was as though he had been dipped bodily into a mythical fountain of youth, and had had every care and worry peeled off with a motherly hand and touch!

His arms lifted with a flexibility that was a joy. He took a deep inhalation that penetrated to the bottom of his lungs, a depth which he had never experienced. It was profound, this feeling.

He saw Cheops at one side, watching him keenly. The man wrapped his girdle around him, remarking:

"You were in it for a long time. Your young body will remember that refreshment for years to come. My old body gathers the flame into it in a short time."

Mansfield was now convinced. That fellow was Cheops. He couldn't deny this reddish substance which had built him up like this. Only, as he gazed upon the shrunken form, he saw what ages of the flame did to the body. It reduced it to a bony counterpart of what it had once been.

Lord! If only such a thing were to be had upon the earth! Think what it would mean! Bodies worn and wasted brought back to the freshness of youth! Senility a thing unknown, overcome and banished. The possibilities were amazing.

There was a new respect in his eyes for the man who had lived longer than any human being, whose brain ceded not to the ravages of that unconquerable essence: Time.

They returned to the other room and fell into a conversation that stocked the scientist's mind with many fine points of an ancient civilization. Cheops was amazed at the knowledge of the Englishman concerning his people of Egypt. Sir John Mansfield was getting his information now from a source which would be the envy of the world of science. Even he, himself, couldn't get over the thrill—that he was speaking to an ancient ruler of very much live proportions, of exceedingly clear and retentive memory, who was just as anxious to narrate as to absorb. He was chatting with the famous Cheops!

"How was I brought up here?" Mansfield asked suddenly.

"Through the golden throne in the chamber of Ra. I created a smoky and dense mist to envelop the chair, so as to prevent those watching from observing the operation. The legs of the chair are rooted firmly into long rods; these rods forced the chair upward to the ceiling, the floor right here, where a trapdoor is opened. Then the throne is dropped back while the mist is still thick, so that during the entire procedure nothing is clear to the men of Atlantis. They could see nothing because of the mist."

CHEOPS seated himself at the glass-topped table and studied the moving dots in the small squares. He engulfed himself completely in his task, knobbing every now and then some square into prominence to perceive what went on there.

Mansfield sat at his side in silence, following each turn of the knob avidly. Once, during the long period as they scanned the board, Cheops found some reason to turn to the chamber of the high priest, and Sir John Mansfield's eyes discovered the girl and the father at a table absorbing food, while two ebony blacks stood by stiffly. There was a far-away look on her face. Cheops glanced at him with a smile.

Mansfield watched the streets of Atlantis through the transparent walls, then turned and asked:

"Why is it that no one has ever come out of the Great Sphinx? Through the same way that I came in by. It would be possible, I think."

Cheops shook his head. "No man of Atlantis will ever go forth through the squatting god! It cannot be done!"

Mansfield felt something pull at him at the statement. An odd tremor stole through him. This strange wonder had often interrogated him. But what did he mean by saying that no one could get through the Great Sphinx? Why, that was the only way out of here!

"No," stated Cheops. "There is no chance there. That final drop on the cage-slab can only be worked from the passage on top, with the blade of the knife. But even if you might succeed in getting up there, there is no means of opening the slab in the paw where you entered. It can only be operated from the outside!"

The knowledge came down upon Mansfield with a crash. Great Heavens! Why, that—that meant that he couldn't get out of this place! That he was destined to spend the rest of his days in this underground abode! And that thought shut out everything else. The only thing that assuaged the terrible emptiness rising within him was the thought of Venia. It was the only salve in this sudden predicament. What good would all this newly found knowledge be if he were not able to make it known to his own people, to the world? If he had to live out the rest of his existence here—and the thought of such a possibility detracted much from the magnificence of Atlantis—it would be a hollow shell of a discovery. Something, which is found and would be of great value to everybody, is of infinitesimal worth when unattainable, or concealed.

Mansfield sat in his chair, tried to speak but could not.

"However," continued Cheops, "there is one place where it is possible to emerge from Atlantis"—and Mansfield hung on to his breath—"but there is great danger of losing one's life there!"

"Where is it—where is it?" precipitated the Englishman.

The erstwhile Ra dropped his eyes over the other. "I don't understand your eagerness. You are become one of us now, Sir John Mansfield. It is the chamber of the flowing water. But forget it. You have seen what powers I am imbued with. Thousands of years are too long a time to be secluded, however. I desire human company. And I have chosen you, my man. How would you like to go on living forever and ever? How would you like to experience the flame of life surging over your body often? It impresses you, does it not?"

But Mansfield never replied to that question. The shriveled man suddenly leaped to his feet with a shriek and pointed out beyond the city confines.

"The man-eating wall! The fixed

rays which control the matter are out! They have been destroyed!"

CHAPTER XIX

Disaster

IN a twinkling Cheops had glued the mouthpiece to his lips and was roaring the news into every chamber. Mansfield, observing with fascination the squares before him, saw the stationary dots suddenly flit around like flies. There was a crazy movement on the reflector table. And looking out of the invisible glass he saw men pouring out of their domiciles and lugging cylindrical objects. Below, the portals of the temple were gushing forth hundreds of men.

Cheops roared, to no one in particular. "What fools they have been! Where were the guards? Those cylinders will barely be able to cope with that hideous mass!"

"Did the mechanism break?" Mansfield asked.

"No! The blacks have destroyed them! Those rays couldn't fail on their own account! What blasted minded creatures the blacks are! Can't they realize that the gray stuff eats black the same as white? They are doomed, too!"

It was clear now! That gray matter worked fast, so fast that it would swallow dozens of men before the rays could drive it back. If there were two bodies of men on either side of it and both directed their cylinders at it at the same time, it could be held stationary until the main rays were fixed again. But there was no great number of men, of course, on the black habitat side, only a handful, and those without ray tubes. The horrible grisly essence would eat through them. And once that fiendish matter was uncontrollable, man here would be doomed! Cheops was right!

Mansfield was activated. He wanted to do something, not to sit up here and watch the white people's chances go glimmering. He must get down there and direct the fighting. Quickly he told Cheops of his intentions. Cheops listened, strode to get at the mouthpiece, but Mansfield grasped it.

"No! Not that way! I must be down there with them! I have to be there!"

For a second the ancient ruler hesitated, then acquiesced. Swiftly he ran to the wall and pulled back a small lever. Mansfield saw a trapdoor in the floor open; something was coming up into it. It was the golden throne from the chamber of Ra. The chair was being hoisted into it by four long poles of metal, until the seat was half in the room. He threw himself into it, held tight to the arms, and the last sight he had of Cheops was his face turned to the glass walls as he hurriedly pulled back the lever.

Even before the golden throne had reached the floor, he had tossed himself to the rugged ground and was streaking for the entrance. Out in the corridor a few men were making mad dashes downward. Practically everybody had already gone.

He raced speedily to the chamber of the high priest and found it empty. Yuxa and Venia were somewhere below. Without a moment's hesitation he flew downward, pacing in large strides. He overtook some laggards, left them far behind, paying no attention to their startled glances at his presence.

Out in the city he ran, from the door of the temple. Men were still milling onward. His eye swept the scene, and he grew angry.

"What fools they are! Why don't they do this systematically? They are all rushing into its horrible jaws!"

But hundreds of men had seen him.

They pointed at him, gesticulated with a surprised array of faces. From somewhere ahead, Mansfield saw a group forcing itself back through the mob. When the men had got into the clear he found that they were hurrying toward him, yelling. It was Yuxa and his official heads, the men of learning and the other dignitaries. And Venia was with them.

Mansfield gave them no time to ask him questions.

"Get all the men lined up, quick! Against the edge of the city. Have them point their cylinders directly at the ground in front of them. Pay no attention to the gray stuff. There must be a wall of rays packed tightly together, so that not one inch of the growth can get through!"

YUXA flashed the order. Venia came to his side and Mansfield held her arm, looking into her face. There was no fear in her! a resolute mouth and brave eyes. She had the utmost confidence in him.

Up ahead the yelling, frantic voices had subsided somewhat and a more orderly tone was to be perceived. Men lined up without a qualm now, and threw the emanation from their tubes directly before them. Rays were cast at a broad front from every angle, to permit no minute avenue of seepage.

And then several men scurried up with panting breath from the rear.

"The blacks have broken a tunnel through to the dungeons and are coming upward. They are destroying everything!"

The news left everybody agape. All the man strength was needed to fight the deadly matter; there could be no attention paid to the blacks. And the crafty minds of the ebony creatures had figured that out. They had broken the rays mechanism to get the whites all up above. Then they had crashed through with their strategic blow!

But their strategy was awfully correct now, Mansfield told himself with a shudder! That man-eating wall needed the most careful of attention. If distracted, the stuff would come right in upon them all! Those hideous blacks couldn't reason that far ahead!

AND at the verification of the black attack from the rear, which came in the shape of howling, demoniac ebon bodies swinging clubs and cylinders, there was a furor in the ranks of the white men. Many tore away from the line which had been created to fight the gray matter, leaving gaping holes in the bluish front. Into the oncoming black mass they threw themselves.

Mansfield drew Venia clear back into the shelter of the temple walls. His voice rose and fell, trying to assemble the men once again, but his efforts fell on deafened ears. Nobody heard him. Everyone was busy protecting himself from black, swishing arms which were inflicting terrible blows.

It was useless to stand here like this. And he couldn't do anything else. Mansfield easily saw that doom was approaching swiftly for all. That seething, undulating mass of animal procreation was rumbling on and on, closer and closer! Not a hundred yards away from the city's edge! A groan burst from his lips.

He whirled on the girl. "It's all over, Venia. We can do nothing. The heartless blacks couldn't see this far ahead. The damnable, inhuman creatures!"

The girl wrapped her arms about him and held him tight. Over her shoulder, Mansfield eyed the slowly slobbering mass which would soon shroud them all with its incomprehensible composition. Well, he groaned again, if it did it would take two bodies right here at

one eating. He was not going to release Venia.

And then a thought came to him and he stood erect, gazing into the face of the girl. Why hadn't he thought of it before? This place was doomed to extinction now. But there might be some way to save Venia and himself if they worked fast.

He asked quickly, "Where is the chamber of the flowing water?"

The girl didn't understand. "Flowing water?"

He waxed more anxious. "Is there any chamber where there is water, lots of it? Anything like that?"

Her eyes opened. "You mean—where our water supply comes from?"

"That's the one," he exulted. "Come, how do we get there?" Once more his eyes swept the fray, which was growing wilder and wilder, and once more he saw that the mass of gray would be upon them with gorging intent in a short while. Nothing, nothing could be done.

"I was there but once in my life, Sir John. But I think I know the way."

Turning, she dived into the temple. Mansfield was upon her heels, and ran swiftly to a level corridor, where she breathlessly pressed open a panel. He saw that it was one of the magnetic vehicles. They rushed into the car and closed the door, just as a huge black came bounding upon the platform after them.

HIS club crashed against the closed door and knocked it half open, but in the split interim Venia had waved her hand over the glowing tube and the car moved away with a jerk, between the large circular rings. The black stumbled on the edge of the platform, couldn't regain his equilibrium and fell head foremost down on the road-bed of the carrier.

"Why do you want to go to the flowing water below? It is a nice place in which to conceal ourselves, but we will be found in the end." The girl was looking at him queerly.

He knew what she was thinking. He, the strong man who performed miracles, was running away and hiding! But he laughed, causing the beautiful eyes to raise in question. He grasped her blonde head in both hands. . . .

"How would you like to go to my land, Venia?"

The girl stared. "You—you mean——"

He kissed her brow fervently. "You dear creature. Somewhere below is the only exit from Atlantis. And I'm going to find it. Will you go with me?"

A sudden sob fell from the girl. She looked backward, toward the land which had reared her, and her eyes welled. It was clear to her now. If Sir John Mansfield said that Atlantis was doomed, it was conclusive. In the rear were her father and the ones she loved. They—they were going down to ruin—to ruin!

"I go!" whispered the soft voice, with a break.

The vehicle rushed downward at a tremendous speed. Suddenly they were thrown against the wall as it stopped abruptly, permitting another car to pass their front. The intersection showed a vehicle ahead which was packed full with ferocious blacks quarreling among themselves. But they caught sight of the huddled pair, and in an instant were turning their car around to follow them.

The girl was watching the other move carefully. She waved her hand upon the shining bulb and pressed a knob. It sent them shooting downward again at a speed that caused them to hold tight to the rings in the sides. But from behind came the roused voices of their pursuers, breaking through the silence of the speeding vehicles.

"We are almost there, Sir John. Hold the door open. We're going to stop

suddenly. Both of us will fall out. I am going to turn this knob and throw off the power control. That will throw theirs off, too, and they'll crash into us with their momentum."

THE conveyance came abreast of a long row of underground chambers, and Mansfield snatched out his revolver and spun the chambers. All of them were holding used shells. He felt his belt and shook his head with a grimace. There were only four cartridges on him. The rest had been fired or had been torn loose from the belt. He quickly inserted the four last.

Suddenly the girl snapped back the knob and they leaped through the door upon a platform. The car had come to an instant standstill, and not fifty feet away whizzed the one with the blacks. A frantic black was pushing back the control knob, to no avail.

The fleeing pair were through the door of a large chamber when there came the splintering crash of both vehicles. Metal and glass flew in all directions. Groans and shrieks split the air. Bodies were hurtling crazily to crash sickeningly into unyielding obstacles!

The noise of the smash died away. The flying pieces of metal floundered against the underground walls. Not a black raised his head.

CHAPTER XX

The Flowing Water

THE Englishman perceived immediately how the water supply was attained. There was a rushing subterranean stream eddying through the deep stone walls, which rose to join the floor of the chamber. Mansfield fell at the edge and peered over, but saw nothing other than the moving water.

The walls were bare and solid. The only opening was the one they had come through. He looked at the girl meditatively. Was Cheops telling him the truth when he said that the chamber of the flowing water was the only exit from Atlantis? It didn't seem to be, now that he was here. The walls could be seen to lead nowhere. His heart sank at the thought that he might have been duped by the emaciated old fellow. This chamber wasn't an outlet, but as perfect a trap as could be gotten into.

"Are you sure there is no other chamber where there is water?" he asked the girl.

She shook her head. "See those long pointed tubes? They carry the water up to the city. They have always done it."

There was nothing for him to do now but to inspect the walls in the hope that a hollow ring would reveal a hidden entrance. With the butt of his gun he went around and sounded them. No echoing reverberation came to his expectant ears. The girl watched him circling the chamber with anxious eyes.

Presently he gave up in disgust, strode to the rim of the floor and stared down at the stream. His fingers went carefully around the edge, but failed in disclosing anything.

The girl ran to the entrance and gasped. Mansfield hurried toward her. Coming down the road-bed was a score of blacks, and as they caught sight of the pair they screamed with delight. Voices shrieked the glee that at last the stranger was in their hands, that the daughter of the high priest was theirs for the taking!

Mansfield drew the girl into the chamber behind him. His mouth was fixed, his face taut. For the first time he feared the outcome of a struggle. With only four bullets available against a howling horde that was rushing pell-mell upon them, and this chamber of the underground stream the trap that it was,

no hope presented itself from any viewpoint.

The blacks climbed upon the braces of the framework and leaped to the platform. Mansfield took deliberate aim and fired at the first fellow to show his head. The black threw up his clawing hands and toppled over.

BUT it didn't stall the others. For once the sound of the gun held no terror for them. They were maniacally worked up; sanity was gone. All they desired was the feel of the white bodies in their ripping hands. They wanted to tear and crush and kill—kill! Nothing else would satisfy their slavering jowls now.

Again and again Mansfield fired into their midst, forcing a momentary halt. Then the gun clicked upon an empty shell! The weapon was of no value to him now. The blacks rushed through the opening.

The attack forced the man and the girl back to the very edge of the stream. He saw Venia glance at him with fear in her drawn eyes. Then she tottered on the brink and fell headmost into the turbulent river!

His mind went blank. With a horrible cry he flung the gun into the face of the nearest black. Like a madman he fought the hideous faces—clawed and tore. His bloody fist ached from the crunch of ebony visages. They piled in on top of him, swinging their clubs to get a fatal blow in effectually.

And then a club crashed against his breast and it knocked him backward. He went pitching over the edge, to splash bodily into the stream!

The water closed over his head and open mouth, and when he came to the top after a while, sputtering and coughing, he felt as though he must have swallowed the whole river. The water was lukewarm. His eyes opened, but he could see nothing for the total blackness which engulfed the place.

His anxiety was for Venia. He doubted much whether she could swim, whether anyone in Atlantis could swim. At no time had she seen a large body of water.

The current was swift and it carried him on, making useless his attempt to use a powerful stroke. He wondered where the girl was. With reaching arms he felt around him as he was being swept onward, hoping that he might come in contact with her, but nothing but water filtered through his fingers. Only when he reached upward did he feel his finger-tips brush against a smooth polished rock, and he knew it was the roof of this watery passage. Every moment he waited for that final surge which would send him crashing into something which would dash his brains out!

He couldn't believe for a moment that this was the egress which Cheops had spoken of, that only through this could one find his way out of Atlantis.

He raised his voice loudly, the wall just over his head throwing back his roar with a deafening sound. Suddenly a thrill went through him. Was it his own voice that echoed so faintly? He thought not.

Time after time he felt his strength giving out. His arms rasped against an eroded wall with such force that they were aching terribly. But he wasn't going to give in to this onrushing torrent. Maybe it was the thought of a watery grave that gave him courage; and he detested a demise of such nature.

He yelled again and was certain that the echo wasn't of his making. He was sure that the girl was still living. His chilled throat burst into another shout.

"Venia!" he yelled.

A sound came from near him—a gasping, coughing noise—but once again the

drag beneath the waters occupied his mind. When he came up again his voice was too spent to raise in a shout, and his lungs were fighting for breath. The loathsome, watery grave was beginning to loom fearfully close! His arms were heavy weights. He felt himself slipping.

There must be some end to this steady river! It couldn't go on and on and on underneath the earth without emerging somewhere. If it did—well, his numbed mind knew the answer. His body fought the swirling, swishing water, knew that if something did not happen soon, it would be all over with him. He wasn't superhuman. He had been fortunate in surviving this long.

And thinking of that sent a more icy chill through his veins. Without a doubt Venia had succumbed. She couldn't have survived this whirling water this long. He was almost on the verge of going down for the last time himself.

If only there were some light. The ghastly blackness didn't help him any. It only made the rising bumps on his head much larger as a surge carried him with force against the roof!

There came a magical change in light just then. His eyes were blinded by a severe whiteness that burned deeply into his retina. His hand flung feebly upward, but there was no roof there this time to tear his skin to pieces! His heart leaped!

He opened his eyes and—a deep cry fell from his lips! God! The sun was shining right into his eyes! What a feeling!

QUICKLY his eyes became used to the light and he sent scouring glances about him. He was in the middle of a small river. Then he became galvanized into action. All fatigue and tiredness had vanished. His roving eyes had caught sight of a form in the water a short distance away.

It was a blonde dripping head which flashed under the glistening sun! A voluntary movement of a hand! It was Venia, and she was alive!

No eddy in the world could have held him back now. His stroke carried him through the water in such strides that an onlooker on the shore would have rubbed his eyes and looked again at the miracle. He reached her just as she was going down; her eyes looked at him glazedly.

He must get her to the shore immediately, and with that intention porpoised toward the nearest bank, the girl held gently yet securely.

He lifted her clear out of the water and laid her upon the sandy shore. Unmindful he was of the condition he was in. His experienced hands forced out the water from her lungs. Her eyes opened presently and recognized him with a sweet smile. Sir John Mansfield raised a glowing face to the sovereign of the heavens lolling along in his fiery chariot and blinked.

CHAPTER XXI

Epilogue

ALMOST six years have passed. Six years redundant of heartaches and jubilation. Six years in which one eminent archæologist, Sir John Mansfield, knew the degree of ridicule and scorn, appreciated the fullness of abounding happiness. And that joy obscured everything else in the end.

Venia was very much affected by the sun and the changing climates of the earth, for a long year. When Sir John Mansfield came out of that hospital on that December evening with the assurance that she would live, he threw up his arms in silent prayer of gratitude. He knew then what the girl meant to him.

The word of the famous scientist had always been fraught with authenticity and fact. But when he revealed the narrative of his experience, from the first moment of encountering Horda el Abrim and the renegade white in El Kasr, to the emerging from Atlantis through the underground stream, he was beset by a volume of hooting and disbelief that even unto a heart such as his it created a fierce dislike for his fellow colleagues.

They demanded the manuscript of Cheops. But, alas! the hotel in Cairo in which he had put his papyrus evidence for safekeeping had burned to the ground and the manager had perished in the flames. It was never found.

Hoping that the Egyptian government might lend an attentive ear, he turned to them. Reluctantly it sent a committee to the Great Sphinx, and when repeated insertions of a blade failed to bring forth the awaited reverberation, they shrugged their shoulders. But Mansfield begged them to break down that massive slab in the paw. Even if they might not succeed in reaching Atlantis, there was that fabulous fortune to be attained in the vault where all of those gorgeous and priceless carvings were. The committee laughed in his face. What! Break down the age-old Sphinx to satisfy a whim? And a rather —how might it be termed?—unbalanced whim?

MANSFIELD fumed at the dunderheads, then turned abruptly from them, holding back his rage. If that was the way the world of science accepted what was probably the greatest discovery of any age—well, then! The blockheads could go on following their noses! He was through with all of them!

He withdrew from every activity, even from the University. His sole delight now was to sit before the fire with Venia in his arms, and recount those happenings of not so very long ago. Every night they asked themselves whether Atlantis had really perished. And it seemed so, for several ensuing summers they had tried to open the slab of the Great Sphinx, but there was no movement. It spelt the complete wiping out of the race below. There was no one, apparently, to operate the mechanism that controlled the Sphinx.

And that flame of life of Cheops! What a thing that would mean to the world above! But that, too, was gone now, buried under that uncontrollable man-eating organism. Yuxa, Cheops, all of them had been subdued into a nothingness! It was a bitter thought to these two.

But when they gaze upon that golden-haired lad who plays at their feet, looking like the young demigod he really is in the eyes of his parents, their joy knows no bounds. He is compensation enough for the bitterness which has assailed the famous scientist and his wife, the sorrow that was forced upon them.

And when his honest and frank eyes of blue glance upward toward them, they hold each other more tightly and ask the Benign Hand to guard and protect him, to keep him from all evil. He is their happiness! They live for him.

THE END

Measuring a Meridian

By JULES VERNE

Serial in Four Parts—Part III

We are now approaching toward the end of the story of the measurement of the meridian. It is a study of geodesy and the data which the distinguished author has given we would strongly advise our readers to follow out, and they will be surprised at the amount of information that has been embodied in the text.

Illustrated by MOREY

WHAT HAS GONE BEFORE:

A PARTY of scientists, some Russian and some English, before the Crimean War of 1854, go to Africa to measure on its extended plains a segment of a meridian of the earth in order to determine its true circumference. Some of the party are at the beginning of the line which is to be measured and are awaiting the arrival of a steamboat carrying much of their equipment and other members, which at last comes up the river. The boat is made to be knocked down, so that it can be put in pieces upon ox wagons and be taken from river to river or lake. We are told of the different attempts to measure a meridian, the details of which are of much interest as presented by our author. Especially does he mention the meridian from the Balearic Islands to Dunkirk on the British Channel. This we are told is especially interesting because its termini are so located that the slight departure of the earth from true sphericity is automatically corrected. One of the party, Sir John, is a great hunter, and we are told of his successes among the great forms of African game, and we are to hear more about it in the latter part of the story.

The party being bi-national—some Russian, some English—and the impending Crimean War does not improve their relations. They select a starting point for their first triangle, for the measurements of the arm is based on a consecutive series of triangles, and the work of the astronomers progresses, while the big game keeps the hunters busy. The killing of an elephant is one of the episodes described and an attack on their canoe by a hippopotamus. Jealousy and ill-feeling between the two nationalities is intensified. The great mathematician, Nicholas Palander, is lost and found; he is too absent-minded for the wilderness. Next comes a battle with lions. An impenetrable forest checks progress as the measurement of the second degree is completed. A passage way is obtained by burning the trees and underbrush in a forest fire. After completing the third degree of longitude a mail from home reaches them and they read of the war of 1854 between England and her allies and Russia. The party divides and prepare to carry out two lines of survey. The Russians get the steamboat. A rhinoceros is killed and Sir John, the English hunter, loses a wager with the native guide, Makoam. And now trouble with the natives threatens.

CHAPTER XVII

The Plague of Locusts

AFTER the oryx hunt the bushman had a long conversation with the Colonel. He felt sure, he said, that they were watched and followed, and that the only reason why they had not been attacked before was because the Makololos wished to get them farther north, where there were more. The Colonel, aware of the importance of the question asked about the Makololos.

At first Sekeletou, the chief of the Makololos, was very friendly toward the Europeans who visited the Zambesi, and Dr. Livingstone had no complaint to make. But after the departure of the famous traveler, not only strangers but the neighboring tribes were harassed by Sekeletou and his warriors. To these vexations succeeded pillage on a large scale, and the Makololos scoured the district between Lake Ngami and the Upper Zambesi. Consequently nothing was more dangerous than for a caravan to venture across this region without a considerable escort, especially when its progress had been previously known.

Colonel Everest consulted with his colleagues, and it was settled that the work, at all risks, should be continued.

The mooring was loosened, and the frail boat started quietly acrôss the lake.

Something more than half the project was now accomplished, and, whatever happened, the English owed it to themselves and their country not to abandon their undertaking. The series of triangles was resumed. On the 27th the tropic of Capricorn was passed, and on the 3rd of November, with the completion of the forty-first triangle, a fifth degree was added to the meridian.

For a month the survey went on rapidly, without meeting a single natural obstacle. Mokoum, always on the alert, kept a constant lookout at the head and flanks of the caravan and forbade the hunters to venture too great a distance away. No immediate danger, however, seemed to threaten the little troop, and they were sanguine that the bushman's fears might prove groundless. There was no further trace of the native who, after eluding them at the cromlech, had taken so strange a part in the oryx chase; nor did any other aggressor appear. Still, at various intervals, the bushman observed signs of trepidation among the Bochjesmen under his command. The incident of the flight from the old cromlech, and the stratagem of the oryx hunt, could not be concealed from them, and they were perpetually expecting an attack. A deadly antipathy existed between tribe and tribe, and, in the event of a collision, the defeated party could entertain no hope of mercy. The Bochjesman were already 300 miles from their home, and there was every prospect of their being carried 200 more. It is true that, before engaging them, Mokoum had been careful to inform them of the length and difficulties of the journey, and they were not men to shrink from fatigue; but now, when to these was added the danger of a conflict with implacable enemies, regret was mingled with murmuring, and dissatisfaction was exhibited with ill-humor, and although Mokoum pretended neither to hear nor see, he was silently conscious of an increasing anxiety.

On the 2d of December a circumstance occurred which still further increased the spirit of complaint among this superstitious people, and provoked them to a kind of rebellion. Since the previous evening the weather had become dull. The atmosphere, saturated with vapor, gave signs of being heavily charged with electric fluid. There was every prospect of the recurrence of one of the storms which in this tropical district are seldom otherwise than violent. During the morning the sky became covered with sinister-looking clouds, piled together like bales of down of contrasted colors, the yellowish hue distinctly relieving the masses of dark gray. The sun was wan, the heat was overpowering, and the barometer fell rapidly; the air was so still that not a leaf fluttered.

Although the astronomers had not been unconscious of the change of weather, they had not thought it necessary to suspend their labors. Emery, attended by two sailors and four natives in charge of a wagon, was sent two miles east of the meridian to establish a post for the vertex of the next triangle. He was occupied in securing his point of sight, when a current of cold air caused a rapid condensation, which appeared to contribute immediately to a development of electric matter. Instantly there fell a violent shower of hail, and by a rare phenomenon the hailstones were luminous, so that it seemed to be raining drops of boiling silver. The storm increased; sparks flashed from the ground and jets of light gleamed from the iron settings of the wagon. Dr. Livingstone relates that he has seen tiles broken, and horses and antelopes killed, by the violence of these hail-storms.

Without losing a moment, Emery left his work for the purpose of calling his

men to the wagon, which would afford better shelter than a tree. But he had hardly left the top of the hill, when a dazzling flash, instantly followed by a peal of thunder, inflamed the air.

Emery was thrown down, and lay prostrate, as though he was actually dead. The two sailors, dazzled for a moment, were not long in rushing toward him, and were relieved to find that the thunderbolt had spared him. He had been enveloped by the fluid, which, collected by the compass which he held in his hand, had been diverted in its course, so as to leave him not seriously injured. Raised by the sailors, he soon came to himself; but he had narrowly escaped. Two natives, twenty paces apart, lay lifeless at the foot of the post. One had been struck by the full force of the thunderbolt, and was a black and shattered corpse, while his clothes remained entire; the other had been locally struck on the skull by the destructive fluid, and had been killed at once. The three men had been undeniably struck by a single flash. This trisection of a flash of lightning is an unusual but not unknown occurrence, and the angular division was very large. The Bochjesmen were at first overwhelmed by the sudden death of their comrades, but soon, in spite of the cries of the sailors and at the risk of being struck themselves, they rushed back to the camp. The two sailors, having first provided for the protection of Emery, conveyed the two dead bodies to the wagon, and then found shelter for themselves, being sorely bruised by the hailstones, which fell like a shower of marbles. For three-quarters of an hour the storm continued to rage; the hail then abated so as to allow the wagon to return to camp.

The news of the death of the natives had preceded them, and had produced a deplorable effect on the minds of the Bochjesmen, who already looked upon the trigonometrical operations with the terror of superstition. They assembled in secret council, and some more timid than the rest declared they would go no farther. The rebellious disposition began to look serious, and it took all the bushman's influence to arrest an actual revolt. Colonel Everest offered the poor men an increase of pay; but contentment was not to be restored without much trouble. It was a matter of emergency; had the natives deserted, the position of the caravan, without escort and without drivers, would have been perilous in the extreme. At length, however, the difficulty was overcome, and after the burial of the natives, the camp was raised, and the little troop proceeded to the hill where the two had met their death.

Emery felt the shock for some days; his left hand, which had held the compass, was almost paralyzed; but after a time it recovered, and he was able to resume his work.

For eighteen days no special incident occurred. The Makololos did not appear, and Mokoum, though still distrustful, exhibited fewer indications of alarm. They were not more than fifty miles from the desert; and the karroo was still verdant, and enriched by abundant water. They thought that neither man nor beast could want for anything in this region so rich in game and pasturage; but they had reckoned without the locusts, against whose appearance there is no security in the agricultural districts of South Africa.

On the evening of the 20th, about an hour before sunset, the camp was arranged for the night. A light northerly breeze refreshed the atmosphere. The three Englishmen and Mokoum, resting at the foot of a tree, discussed their plans for the future. It was arranged that during the night the astronomers should take the altitude of some

stars, in order accurately to find their latitude. Every thing seemed favorable for the operations; in a cloudless sky the moon was nearly new, and the constellations might be expected to be clear and resplendent. Great was the disappointment, therefore, when Emery, rising and pointing to the north, said:

"The horizon is overcast; I begin to fear our anticipations of a fine night will hardly be verified."

"Yes," replied Sir John, "I see a cloud is rising, and if the wind should freshen, it might overspread the sky."

"There is not another storm coming, I hope," interposed the Colonel.

"We are in the tropics," said Emery, "and it would not be surprising; for to-night I begin to have misgivings about our observations."

"What is your opinion, Mokoum?" asked the Colonel of the bushman.

Mokoum looked attentively toward the north. The cloud was bounded by a long clear curve, as definite as though traced by a pair of compasses. It marked off a section of some miles on the horizon, and its appearance, black as smoke, seemed to excite apprehensions of the bushman. At times it reflected a reddish light from the setting sun, as though it were rather a solid mass than any collection of vapor. Without direct reply to the Colonel's appeal, Mokoum simply said that it was strange.

In a few minutes one of the Bochjesmen announced that the horses and cattle showed signs of agitation, and would not be driven to the interior of the camp.

"Well, let them stay outside," said Mokoum; and in answer to the suggestion that there would be danger from the wild beasts around, he added significantly, "Oh, the wild beasts will be too much occupied to pay any attention to them."

After the native had gone back, Colonel Everest turned to ask what the bushman meant; but he had moved away, and was absorbed in watching the advance of the cloud, of which, too accurately, he was aware of the origin.

The dark mass approached. It hung low and appeared to be but a few hundred feet from the ground. Mingling with the sound of the wind was heard a peculiar rustling, which seemed to proceed from the cloud itself. At this moment, above the cloud against the sky, appeared thousands of black specks, fluttering up and down, plunging in and out, and breaking the distinctness of the outline.

"What are those moving specks of black?" asked Sir John.

"They are vultures, eagles, falcons, and kites," answered Mokoum, "from afar they have followed the cloud, and will never leave it until it is destroyed or dispersed."

"But the cloud?"

"Is not a cloud at all," answered the bushman, extending his hand toward the somber mass, which by this time had spread over a quarter of the sky. "It is a living host; to say the truth, it is a swarm of locusts."

The hunter was not mistaken. The Europeans were about to witness one of those terrible invasions of grasshoppers, which are unhappily too frequent, and in one night change the most fertile country into an arid desert. These locusts, now arriving by millions, were the dread *schistocerca* of the naturalists, and travelers have seen for a distance of fifty miles the beach covered with piles of these insects to the height of four feet.

"Yes," continued the bushman, "these living clouds are a true scourge to the country, and it will be lucky if we escape without harm."

"But we have no crops and pasturages

of our own," said the Colonel; "what have we to fear?"

"Nothing, if they merely pass over our heads; everything if they settle on the country over which we must travel. They will not leave a leaf on the trees nor a blade of grass on the ground; and you forget, Colonel, that if our own sustenance is secure, that of our animals is not. What do you suppose will become of us in the middle of a devastated district!"

The astronomers were silent for a time, and contemplated the animated mass before them. The cries of the eagles and falcons, who were devouring the insects by thousands, sounded above the redoubled murmur.

"Do you think they will settle here?" said Emery.

"I fear so," answered Mokoum, "the wind carries them here direct. The sun is setting, and the fresh evening breeze will bear them down; should they settle on the trees, bushes and prairies, why, then I tell you——" But the bushman could not finish his sentence. In an instant the enormous cloud which overshadowed them settled on the ground. Nothing could be seen as far as the horizon but the thickening mass. The camp was bestrewed; wagons and tents alike were veiled beneath the living hail. The Englishmen, moving knee-deep in the insects, crushed them by hundreds at every step.

Although there was no lack of agencies at work for their destruction, their aggregate defied all check. The birds, with hoarse cries, darted down from above, and devoured them greedily; from below, the snakes consumed them in enormous quantities; the horses, buffaloes, mules and dogs fed on them with great relish, and lions and hyenas, elephants and rhinoceroses swallowed them down by bushels. The very Bochjesmen welcomed these "shrimps of the air" like celestial manna; the insects even preyed on each other, but their numbers still resisted all sources of destruction.

The bushman entreated the English to taste the dainty. Thousands of young locusts, of a green color, an inch to an inch and a half long, and about as thick as a quill, were caught. Before they have deposited their eggs, they are considered a great delicacy by connoisseurs, and are more tender than the old insects, which are of a yellowish tinge, and sometimes measure some inches in length. After a half an hour's boiling, and seasoning with salt, pepper and vinegar, the bushmen served up a tempting dish to the three Englishmen. The insects, dismembered of head, legs and skin, were eaten just like shrimps, and were found extremely savory. Sir John, who ate some hundreds, recommended his people to take advantage of the opportunity to make a large provision.

At night they were all about to seek their usual beds; but the interior of the wagons had not escaped the invasion. It was impossible to enter without crushing the locusts, and to sleep under such conditions was not an agreeable prospect. Accordingly as the night was clear and the stars bright, the astronomers were rejoiced to pursue their contemplated operations, and deemed it more pleasant than burying themselves to the neck under a coverlet of locusts. Moreover, they would not have had a moment's sleep, on account of the howling of the beasts which were attracted by their unusual prey.

The next day the sun rose in a clear horizon, and commenced its course over a brilliant sky foreboding heat. A dull rustling of wings among the locusts showed that they were about to carry their devastations elsewhere; and toward eight o'clock the mass rose like the unfurling of an immense veil, and obsured

the sun. It grew dusk as if night were returning, and with the freshening of the wind the whole mass was in motion. For two hours, with a deafening noise, the cloud passed over the darkened camp, and disappeared beyond the western horizon.

After their departure the bushman's predictions were found to be entirely realized. All was demolished, and the soil was brown and bare. Every branch was stripped to utter nakedness. It was like a sudden winter settling in the height of summer, or like the dropping of a desert into the midst of a land of plenty. The Oriental proverb which describes the devastating fury of the Osmanlis might justly be applied to these locusts, "Where the Turk has passed the grass springs up no more."

CHAPTER XVIII

Desertion and Reunion

IT was indeed no better than a desert which now lay before the travelers. When, on the 25th of December they completed the measurement of another degree, and reached the northern boundary of the karroo, they found no difference between the district they had been traversing and the new country; the real desert, arid and scorching, over which they were now about to pass. The animals belonging to the caravan suffered greatly from the dearth alike of pasturage and water. The last drops of rain in the pools had dried up, and it was an arid soil, a mixture of clay and sand, very unfavorable to vegetation. The waters of the rainy season sunk through the sandy strata, so that the region was incapable of preserving for any length of time a particle of moisture. More than once has Dr. Livingstone carried his adventurous explorations across one of these barren districts. The very atmosphere was so dry, that iron left in the open air did not rust, and the distinguished traveler relates that the leaves hung weak and shriveled; that the mimosas remained closed by day, as well as by night; that the scarabæi, laid on the ground, expired in a few seconds; and that the mercury in the ball of a thermometer buried three inches in the soil rose at midday to 130° Fahrenheit.

These records which Livingstone had made were now verified by the astronomers between the karroo and Lake Ngami. The suffering and fatigue, especially of the animals, continually increased, and the dry dusty grass afforded them but little nourishment. Nothing ventured on the desert; the birds had flown beyond the Zambesi for fruit and flowers, and the wild beasts shunned the plain which offered them no prey. During the first fortnight in January the hunters caught sight of a few couples of those antelopes which are able to exist without water for several weeks. There were some oryxes like those in whose pursuit Sir John had sustained so great a disappointment, and there were besides, some dappled, soft-eyed caamas, which venture beyond the green pasturages, and which are much esteemed for the quality of their flesh.

To travel under that burning sun through the stifling atmosphere, to work for days and nights in the oppressive sultriness, was fatiguing in the extreme. The reserve of water evaporated continuously, so they were obliged to ration themselves to a painfully limited allowance. However, such were their zeal and courage that they mastered all their troubles, and not a single detail of their task was neglected. On the 25th of January they completed their seventh degree, the number of triangles constructed having amounted to fifty-seven.

Only a comparatively small portion of the desert had now to be traversed, and the bushman thought that they

would be able to reach Lake Ngami before their provision was exhausted. The Colonel and his companions thus had definite hopes, and were inspirited to persevere. But the hired Bochjesmen, who knew nothing of any scientific ardor, and who had been long ago reluctant to pursue their journey, could hardly be encouraged to hold out; unquestionably they suffered greatly, and were objects for commiseration. Already, too, some beasts of burden, overcome by hard work and scanty food, had been left behind, and it was to be feared that more would fall into the same helpless condition. Mokoum had a difficult task to perform, and as murmurs and recriminations increased, his influence more and more lost its weight. It became evident that the want of water would be a serious obstacle, and that the expedition must either retrace its steps, or, at the risk of meeting the Russians, turn to the right of the meridian, to seek some of the villages which were known to be scattered along Livingstone's route.

It was not long, however, before the bushman one morning came to the Colonel, and declared himself powerless against the increasing difficulties. The drivers, he said, refused to obey him; and there were continued scenes of insubordination, in which all the natives joined. The Colonel perfectly well understood the situation; but stern to himself, he was stern to others. He refused to suspend his operations, and declared that although he went alone, he would continue to advance. His two companions of course agreed, and professed themselves ready to follow him. Renewed efforts of Mokoum persuaded the natives to venture a little further; he felt sure that the caravan could not be more than five or six days' march from Lake Ngami, and once there, the animals could find pasturage and shade, and the men an abundance of fresh water. All these considerations he laid before the principal Bochjesmen. He showed them that it was really best to advance northward. If they turned to the west, their march would be perilous, and to turn back was only to find the karroo desolate and dry. The natives at length yielded to his solicitations, and the almost exhausted caravan continued its course.

Happily this vast plain was in itself favorable to all astronomical observations, so that no delay arose from any natural obstruction. On one occasion there sprang up a sudden hope that nature was about to restore to them a supply of the water of which she had been so niggardly. A lagoon, a mile or two in extent, was discovered on the horizon. The reflection was indubitably of water, proving that what they saw was no mirage, due to the unequal density of the atmospheric strata. The caravan speedily turned in that direction, and the lagoon was reached toward five in the evening. Some of the horses broke away from their drivers, and galloped to the longed-for water. Having smelt it, they plunged in to their chests, but almost immediately returned to the bank. They had not drunk, and when the Bochjesmen arrived they found themselves by the side of the lagoon so impregnated with salt that its water could not be touched. Disappointment was keen, it was little short of despair. Mokoum thought that he should never induce the natives to proceed; but fortunately the only hope was in advancing, and even the natives were alive to the conviction that Lake Ngami was the nearest point where water could be procured. In four days, unless retarded by its labors, the expedition must reach the shores of the lake.

Every day was momentous. To economize time, Colonel Everest formed larger triangles and established fewer

posts. No efforts were spared to hurry on the progress of the survey. Notwithstanding the application of every energy, the painful sojourn in the desert was prolonged, and it was not until the 21st of February that the level ground began to be rough and undulating. A mountain 500 or 600 feet high was descried about fifteen miles to the northwest. The bushmen recognized it as Mount Scorzef, and, pointing to the north, said:

"Lake Ngami is there."

"The Ngami! the Ngami!" echoed the natives, with noisy demonstration. They wished to hurry on in advance over the fifteen miles, but Mokoum restrained them, asserting that the country was infested by Makololos, and that it was important to keep together. Colonel Everest, himself eager to reach the lake, resolved to connect by a single triangle the station he was now occupying with Mount Scorzef. The instruments were therefore arranged, and the angle of the last triangle which had been already measured from the south was measured again from the station. Mokoum, in his impatience, only established a temporary camp; he hoped to reach the lake before night, but he neglected none of his usual precautions, and prudently sent out horsemen, right and left, to explore the underwood. Since the oryx-chase the Makololos seemed indeed to have abandoned their watch, still he would not incur any risk of being taken by surprise.

Thus carefully guarded by the bushman, the astronomers constructed their triangle. According to Emery's calculations it would carry them nearly to the twentieth parallel, the proposed limit of their arc. A few more triangles on the other side of Lake Ngami would complete their eighth degree; to verify the calculations, a new base would subsequently be measured directly on the ground, and the great enterprise would be ended. The ardor of the astronomers increased as they approached the completion of their task.

Meanwhile there was considerable curiosity as to what the Russians on their side had accomplished. For six months the members of the commission had been separated, and it seemed probable to the English that the Russians had not suffered so much from heat and thirst, since their course had lain nearer Livingtone's route, and therefore in less arid regions. After leaving Kolobeng they would come across various villages to the right of their meridian, where they could easily revictual their caravan. But still it was not unlikely that in this less arid, though more frequented country, Mathew Strux's little band had been more exposed to the attack of the plundering Makololos, and this was the more probable, since they seemed to have abandoned the pursuit of the English caravan.

Although the Colonel, ever engrossed, had no thought to bestow on these things, Sir John and Emery had often discussed the doings of their former comrades. They wondered whether they would come across them again, and whether they would find that they had obtained the same mathematical result as themselves, and whether the two computations of a degree in South Africa would be identical. Emery did not cease to entertain kind memories of his friend, knowing well that Zorn, for his part, would never forget him.

The measurement of the angles was now resumed. To obtain the angle at the station they now occupied, they had to observe two points of sight. One of these was formed by the conical summit of Mount Scorzef, and the other by a sharp peak three or four miles to the left of the meridian, whose direction was easily obtained by one of the telescopes of the repeating circle. Mount Scorzef

was much more distant; its position would compel the observers to diverge considerably to the right of the meridian, but on examination they found they had no other choice. The station was therefore observed with the second telescope of the repeating circle, and the angular distance between Mount Scorzef and the smaller peak was obtained.

Notwithstanding the impatience of the natives, Colonel Everest, as calmly as though he were in his own observatory, made many successive registries from the graduated circle of his telescope, and then, by taking the average of all his readings, he obtained a result rigorously exact.

The day glided on, and it was not until the darkness prevented the reading of the instruments, that the Colonel brought his observations to an end, saying:

"I am at your orders, Mokoum; we will start as soon as you like."

"And none too soon," replied Mokoum; "better had we accomplished our journey by daylight."

The proposal to start met with unanimous approval, and by seven o'clock the thirsty party were once more on the march.

Some strange foreboding seemed weighing on the mind of Mokoum, and he urged the three Europeans to look carefully to their rifles and to be well provided with ammunition. The night grew dark, the moon and stars were repeatedly veiled in mist, but the atmosphere near the ground was clear. The bushman's keen vision was ever watching the flanks and front of the caravan, and his unwonted disquietude could not fail to be noticed by Sir John, who was likewise on the watch. They toiled through the weary evening, occasionally stopping to gather together the loiterers, and at ten o'clock they were still six miles from the lake. The animals gasped for breath in an atmosphere so dry that the hygrometer could not have detected a trace of moisture.

Mokoum was indefatigable in his endeavors to keep the disorganized party close together; but, in spite of his remonstrances, the caravan no longer presented a compact nucleus. Men and beasts stretched out into a long file, and some oxen had sunk exhausted to the ground. The dismounted horsemen could hardly drag themselves along, and any stragglers could have been easily carried off by the smallest band of natives. Mokoum went in evident anxiety from one to another, and with word and gestures tried to rally the troop, and already, without his knowledge, some of his men were missing.

By eleven o'clock the foremost wagons were hardly more than three miles from their destination. In the gloom of night Mount Scorzef stood out distinctly in its solitary height, like an enormous pyramid, and the obscurity made its dimensions appear greater than they actually were. Unless Mokoum were mistaken, Lake Ngami lay just behind Mount Scorzef, so that the caravan must pass round its base in order to reach the tract of fresh water by the shortest route.

The bushmen, in company with the three Europeans, took the lead, and prepared to turn to the left, when suddenly some distinct, though distant report, arrested their attention. They reined in their horses, and listened with a natural anxiety. In a country where the natives use only assegais* and bows and arrows the report of European firearms was rather startling. The Colonel and Sir John simultaneously asked the bushman from whence the sound could proceed. Mokoum asserted that he could perceive a light in the shadow at the summit of Mount Scorzef, and that he

*An assegai is a light spear used for throwing as well as in close combat.

had no doubt that the Makololos were attacking a party of Europeans.

"Europeans!" cried Emery.

"Yes," replied Mokoum; "these reports can only be produced by European weapons."

"But what Europeans could they be?" began Sir John. "Be who they may," broke in the Colonel, "we must go to their assistance."

"Yes; come on," said Emery, with no little excitement.

Before starting off for the mountain, Mokoum, for the last time, tried to rally the small band. But when the bushman turned round the caravan was dispersed, the horses were unyoked, the wagons forsaken, and a few scattered shadows were flying along the plain towards the south.

"The cowards!" he cried; then turning to the English he said, "Well, we must go on."

The Englishmen and the bushman, gathering up all the remaining strength of their horses, rode on to the north. After awhile they could plainly distinguish the war-cry of the Makololos. Whatever was their number, it was evident they were making an attack on Mount Scorzef, from the summit of which flashes of fire continued. Groups of men could be faintly distinguished ascending the sides. Soon the Colonel and his companions were on the rear of the besiegers. Abandoning their worn-out steeds, and shouting loud enough to be heard by the besieged, they fired at the mass of natives. The rapidity with which they reloaded caused the Makololos to imagine themselves assailed by a large troop. The sudden attack surprised them, and letting fly a shower of arrows and assegais, they retreated. Without losing a moment, the Colonel, Sir John, Emery, Mokoum and the sailors, never desisting from firing, attacked the group of natives, of whose bodies no less than fifteen soon strewed the ground.

The Makololos divided. The Europeans rushed into the gap, and overpowering the foremost, ascended the slope backward. In a few minutes they had reached the summit, which was now entirely in darkness, the besieged having suspended their fire for fear of injuring those who had come so opportunely to their aid.

They were the Russian astronomers. Strux, Palander, Zorn, and their five sailors, all were there: but of all the natives belonging to their caravan there remained but the faithful pioneer. The Bochjesmen had been as faithless to them as they had been to the English.

The instant the Colonel appeared, Strux darted from the top of a low wall that crowned the summit.

"The English!" he cried.

"Yes," replied the Colonel gravely; "but now neither Russian nor English. Nationalities must be forgotten; for mutual defense we are kinsmen, in that we are one and all Europeans!"

CHAPTER XIX

Success or Death

NOBLE words were those just uttered by the Colonel. In the face of the Makololos it was no time for hesitation or discussion, and English and Russians, forgetting their national quarrel, were now reunited for mutual defense more firmly than ever. Emery and Zorn had warmly greeted each other, and the others had sealed their new alliance with a grasp of the hand.

The first care of the English was to quench their thirst. Water, drawn from the lake, was plentiful in the Russian camp. Then, as soon as the Makololos were quiet enough to afford some re-

spite, the astronomers, sheltered by a sort of casemate forming part of a deserted fortress, talked of all that had happened since their separation at Kolobeng.

It appeared that the same reason had brought the Russians so far to the left of their meridian as had caused the English to turn to the right of theirs. Mount Scorzef, half way between the two arcs, was the only height in that district which would serve as a station on the banks of Lake Ngami. Each of the meridians crossed the lake, whose opposite shores it was necessary to unite trigonometrically by a large triangle. Naturally, therefore, the two rival expeditions met on the only mountain which could serve their purpose.

Matthew Strux then gave some details of his operations. After leaving Kolobeng, the Russian party had continued without irregularity. The old meridian, which had fallen by lot to the Russians, crossed a fertile and slightly undulated country, which offered every facility for the triangulation. Like the English, they had suffered from the heat, but they had experienced no hardship from the want of water. Streams were abundant, and kept up a wholesome moisture. The horses and oxen had roamed over an immense pasturage, across verdant prairies broken by forests and underwood. The wild animals by night had been safely kept at a distance by sentinels and fires, nor had any natives been seen except those stationary in the villages in which Dr. Livingstone had always found a hospitable reception. All through the journey the Bochjesmen of the caravan had given no cause for complaint, nor was it until the previous day, when the Makololos to the number of 200 or 300 had appeared on the plain, that they had shown themselves faithless and had deserted. For thirty-six hours the expedition had now occupied the little fortress.

Makololos had attacked them in the evening, after plundering the wagons left at the foot of the hill. The instruments fortunately, having been carried into the fort, were secure. The steamboat had also escaped the ravages of the natives; it had been immediately put together by the sailors, and was now at anchor in a little creek of Lake Ngami, behind the enormous rocks that formed the base of the mountain. Mount Scorzef sloped with sudden abruptness down to the lake, and there was no danger of an attack from that side.

Such was Matthew Strux's account. Colonel Everest, in his turn, related the incidents of his march, the fatigues and difficulties, and the revolt of the Bochjesmen, and it was found by comparison that the Russians had had a less harassing journey than had their rivals.

The night of the 21st passed quietly. Makoum and the sailors kept watch under the walls for the fort; the Makololos on their part did not renew their attack, but the bivouac-fires at the foot of the mountain proved that they had not relinquished their project. At daybreak the Europeans left their casemate for the purpose of reconnoitering the plain. The early morning light illuminated the vast extent of country as far as the horizon. Toward the south lay the desert, with its burnt brown grass and barren aspect. Close under the mountain was the circular camp, containing a party of 400 or 500 natives. The fires were still alight, and some pieces of game were broiling on the hot embers. The encampment was something more than temporary; the Makololos were evidently determined not to abandon their prey. Either vengeance or an instinctive thirst for blood appeared to be prompting them, since all the valuables of both caravans, the wagons, horses,

oxen, and provisions had fallen into their power; or perhaps it might be that they coveted the firearms which the Europeans carried, and of which such terrible use has been made. The united English and Russians held a long consultation with the bushman, and it was felt that they could not relax their watch until they should arrive at some definite decision. This decision must depend on a variety of circumstances, and first of all it was necessary to understand exactly the position of Mount Scorzef.

The mountain overlooked to the south, east, and west the vast desert which the astronomers, having traversed it, knew extended southwards to the karroo. In the west could be discerned the faint outlines of the hills bordering the fertile country of the Makololos, one of whose capitals, Maketo, lies about a hundred miles northwest of Lake Ngami. To the north the mountain commanded a country which was a great contrast to the arid steppes of the south. There were water, trees, and pasturage. For a hundred miles east and west lay the long Lake Ngami, while from north to south its width was not more than 30 to 40 miles. Beyond appeared a gentle, undulated country, enriched with forests and watered by the affluents of the Zambesi, and shut in to the extreme north by a low chain of mountains. This wild oasis was caused by the great artery, the Zambesi, which is to South Africa what the Danube is to Europe, or the Amazon to South America.

The side of the mountain toward the lake, steep as it was, was not so steep but that the sailors could accomplish an ascent and descent by a narrow way which passed from point to point. They thus contrived to reach the spot where the *Queen and Czar* lay hid, and, obtaining a supply of water, enabled the little garrison to hold out in the deserted fort as long as their provisions lasted.

The astronomers wondered why this little fort had been placed on the top of the mountain. Mokoum, who had visited the country as Livingstone's guide, explained that formerly the neighborhood of Lake Ngami was frequented by traders in ivory and ebony. The ivory was furnished by the elephants and rhinoceroses; but the ebony trade was but too often another name for that traffic in human beings which is still carried on by the slave-traders in the region of the Zambesi. A great number of prisoners are made in the wars and pillages in the interior of the country, and these prisoners are sold as slaves. Mount Scorzef had been a center of encampment for the ivory-traders, and it was there that they had been accustomed to rest before descending the Zambesi. They had fortified their position to protect themselves and their slaves from depredations, since it was not an uncommon occurrence for the prisoners to be recaptured for fresh sale by the very men who had recently sold them. The route of the traders was now changed; they no longer passed the shores of the lake, and the little fort was falling into ruins. All that remained was an inclosure in the form of the sector of a circle, from the center of which rose a small casemated redoubt, pierced with loop-holes, and surmounted by a small wooden turrent.

But notwithstanding the condition of ruin into which it had fallen, the fortress offered the Europeans a welcome retreat. Behind the thick sandstone walls, and armed with their rapid-firing guns, they were confident that they could keep back an army of Makololos, and unless their provisions and ammunition failed, they would be able to complete their observations. At present they had plenty of ammunition; the coffer in which it was contained had been placed on the same wagon which carried the steamboat, and had therefore escaped the ra-

pacity of the natives. The great difficulty would be the possible failure of provisions. The Colonel and Strux made a careful inspection of the store; and found that there was only enough to last the eighteen men for two days. After a short breakfast the astronomers and the bushman, Makoum, leaving the sailors still to keep watch around the walls, assembled in the redoubt to discuss their situation.

"I cannot understand," said Mokoum, "why you are so uneasy. You say that we have only provisions for two days; but why stay here? Let us leave to-morrow, or even to-day. The Makololos need not hinder us; they could not cross the lake, and in the steamboat we may reach the northern shore in a few hours."

The astronomers looked at each other: the idea, natural as it was, had not struck them before. Sir John was the first to speak.

"But we have not yet completed the measurement of our meridian."

"Will the Makololos have any regard for your meridian?" asked the hunter.

"Very likely not," answered Sir John; "but *we* have a regard for it, and will not leave our undertaking incomplete. I am sure my colleagues agree with me."

"Yes," said the Colonel, speaking for all; "as long as one of us survives, and is able to put his eye to his telescope, the survey shall go on. If necessary, we will take our observations with our instruments in one hand and our guns in the other, even to the last extremity."

The energetic philosophers affirmed their resolution to proceed at every hazard.

When it was thus decided that the survey should at all risks be continued, the question arose as to the choice of the next station.

"Although there will be a difficulty," said Strux, "in joining Mount Scorzef trigonometrically with a station to the north of the lake, it not impracticable. I have fixed on a peak in the extreme northeast, so that the side of the triangle will cross the lake obliquely."

"Well," said the Colonel, "if the peak exists, I do not see any difficulty."

"The only difficulty," replied Strux, "consists in the distance."

"What is the distance?"

"Over a hundred miles, and a lighted signal must be carried to the top of the peak."

"Assuredly that can be done," said the Colonel.

"And all that time, how are we to defend ourselves against the Makololos?" asked the bushman.

"We will manage that, too."

Mokoum said that he would obey the Colonel's orders, and the conversation ended. The whole party left the casemate, and Strux pointed out the peak he had chosen. It was the conical peak of Volquiria, 2,000 feet high, and just visible in the horizon. Notwithstanding the distance, a powerful reflector could thence be discerned by means of a magnifying telescope, and the curvature of the earth's surface, which Strux had taken into account, would not be any obstacle. The real difficulty was how the lamp should be carried to the top of the mountain. The angle made at Mount Scorzef with Mount Volquiria and the preceding station would complete the measure of the meridian, so that the operation was all important. Zorn and Emery offered to take this journey of a hundred miles in an unknown country, and, accompanied by the pioneer, prepared to start.

One of the canoes which are manufactured by the natives with great dexterity, would be sufficient to carry them over the lake. Mokoum and the pioneer descended to the shore where were growing some dwarf birches, and in a short

time accomplished their task and prepared the canoe.

At eight o'clock in the evening the newly constructed craft was loaded with instruments, the apparatus for the reflecting lamp, provisions, arms, and ammunition. It was arranged that the astronomers should meet again in a small creek known to both Mokoum and the pioneer; it was also agreed that as soon as the light on Mount Volquiria should be perceived, Colonel Everest should light a signal on Mount Scorzef, so that Emery and Zorn, in their turn, might take the direction.

The young men took leave of their colleagues, and descended the mountain in the obscurity of night, having been preceded by the pioneer and two sailors, one English and one Russian. The mooring was loosened, and the frail boat started quietly across the lake*

CHAPTER XX

The Siege

NOT without anxiety had the astronomers witnessed the departure of their young colleagues; they could not tell what dangers awaited them in that unknown country. Mokoum tried to reassure them by praising the courage of the pioneer, and besides, he said, the Makololos were too much occupied around Mount Scorzef to beat the country to the north of Lake Ngami. He instinctively felt that the Colonel and his party were in a more dangerous position than the two young astronomers.

The sailors and Mokoum kept watch in turns through the night. But "the reptiles," as the bushman termed the Makololos, did not venture another attack. They seemed to be waiting for reinforcements, in order to invade the mountain from all sides, and overcome by their numbers the resistance of the besieged.

The hunter was not mistaken in his conjectures; and when daylight appeared Colonel Everest perceived a sensible increase in the number of the natives. Their camps, carefully arranged around the base of the mountain, shut off escape on every side except that toward the lake. This side could not be invested, so that unless unforeseen circumstances occurred, retreat to the water was always practicable. But the Europeans had no thought of escaping; they occupied a post of honor, and were all agreed that it must not be abandoned. No allusion was ever made to the war between England and Russia, and both parties strove together to accomplish their scientific labor.

The interval of waiting for the signal on Mount Volquiria was employed in completing the measurement of the preceding triangle and in finding the exact latitude of Mount Scorzef by means of the altitude of the stars.

Mokoum was called upon to say what would be the shortest possible space of time that must elapse before Emery and Zorn could reach Mount Volquiria. He replied that as the journey was to be performed on foot, and the country was continually crossed by rivers, he did not think that they could arrive in less than five days at least. They therefore adopted a maximum of six days, and proportioned out their supplies to serve for that period. Their reserve was very limited, consisting only of a few pounds of biscuit, preserved meat, and permmican, and had already been diminished by the portion furnished to the pioneer's little troop. Colonel Everest and his companions, anxiously anticipating the sixth day, decided that the daily ration must be reduced to a third of their previous allowance. The thirteen men

* Lake Ngami was of about 300 square miles area. It has now lost most of its water and has become a sort of swamp.

would doubtless suffer much from this small amount of nourishment, but there was an unflinching determination to bear up bravely.

"Besides," said Sir John, "we have room enough to hunt."

Mokoum shook his head doubtfully: he thought that game would be rare on the mountain. However, his gun need not be idle, and leaving the astronomers to examine and correct their registers, he set off with Sir John.

The Makololos were quietly encamped, and apparently patient in their intention of reducing the besieged by famine. The two hunters reconnoitered the mountain. The fort occupied a space of ground measuring not more than a quarter of a mile in its widest part. The soil was covered with flints and grass, dotted here and there with low shrubs, and bright with gladioli. Red heaths, silvery-leaved proteæ, and ericæ with wavy fronds, formed the flora of the mountain, and beneath the angles formed by the projections of rock sprung up thorny bushes ten feet high, with bunches of a sweet-smelling white flower. The bushman was ignorant of its name, but it was doubtless the *Arduina bispinosa,* which bears fruit like the barberry.

After an hour's search Sir John had seen no trace of game. Some little birds with dark wings and red beaks flew out of the bushes, but at the first shot they disappeared, no more to return. It was evident that the garrison must not depend on the products of the chase for sustenance.

"We can fish in the lake," said Sir John, standing and contemplating the fine extent of water.

"To fish without net or line," replied the bushman, "is as difficult as to lay hands on birds on the wing. But we will not despair; chance has hitherto favored us."

"Chance! nay, not chance, but Providence," said Sir John. "That does not forsake us; it has brought us to the Russians, and will no doubt carry us on to our goal."

"And will Providence feed us, Sir John?" asked the bushman.

"No doubt, Mokoum," said Sir John encouragingly; and the bushman thought to himself that no blind trust in Providence should prevent him from using his own best exertions.

The 25th brought no change in the relative positions of the beseigers and the besieged. The Makololos having brought in the plundered wagons, remained in their camps. Herds and flocks were grazing in the pasturages at the foot of the mountain, and some women and children, who had joined the tribe, went about and pursued their ordinary occupations. From time to time, some chief, recognizable by the richness of the skins which he wore, ascended the slope of the mountain and tried to examine the approaches to the summit; but the report of a rifle always took him speedily back to the plain. The Makololos then raised their war-cry, brandished their assegais, and all became quiet.

The following day the natives made a more serious attempt, and about fifty of them at once scaled three sides of the mountain. The whole garrison turned out to the foot of the enclosure, and the European arms caused considerable ravage among the Makololos. Five or six were killed, and the rest abandoned their project, but it was quite evident that if several hundred were to assault the mountain simultaneously, the besieged would find it difficult to face them on all sides. Sir John now thought of the mitrailleuse, which was the principal weapon of the *Queen and Czar,* and proposed that it should be brought up to defend the front of the fortress. It was

a difficult task to carry the machine up the rocks, which in some parts were almost perpendicular; but the sailors showed themselves so agile and daring, that in the course of the day the mitrailleuse was installed in the embrasure of the embattled enclosure. Thence, its twenty-five muzzles, arranged in the shape of a fan, would cover the front of the fort, and the natives would thus early make the acquaintance with the engine of death which in after years was to effect such devastation among the civilized armies of the European continent.

The dry air and clear sky had enabled the astronomers each night to pursue their observation. They had found the latitude of Mount Scorzef to be 19°, 37′, which result confirmed their opinion that they were less than half a degree from the northern extremity of their meridian, and that consequently the next triangle would complete the series.

The night passed without any fresh alarm. If circumstances had favored the pioneer, he and his companions would reach Mount Volquiria the following day, so that the astronomers kept unflagging watch through the next night for the appearance of the light. Strux and the Colonel had already pointed the telescope to the peak, so that it was continuously embraced in the field of the object-glass, otherwise it would have been difficult to discern on a dark night; as it was, the light would doubtless be perceived immediately on its appearance.

All day Sir John beat fruitlessly the bushes and long grass. He could not unearth a single animal that was fit to eat. The very birds, disturbed from their retreats, had gone to the underwood on shore for shelter. Sir John was extremely vexed, inasmuch as he was not hunting merely for personal gratification, but to supply the necessities of the party. Perhaps he himself suffered from hunger more than his three colleagues, whose attention was more engrossed in their application to science. The sailors and Mokoum suffered equally with Sir John. One more day and their scanty reserve would be at an end, and if the pioneer's expedition were delayed, they would soon be exposed to a severe extremity of hunger.

The dark, calm night was passed in watching; but the horizon remained wrapped in shade, and no light appeared in the object-glass of the telescope. The minimum of time, however, allowed to the expedition had hardly expired, and they felt that they were bound to exercise patience for a while.

The next day the garrison ate their last morsel of meat and biscuit; but their courage did not fail, and, though they should be obliged to feed on what herbs they could gather, they were resolved to hold out.

The succeeding night passed without any result. More than once the astronomers believed that they had seen the light, but it always proved to be a star in the misty horizon.

On the 1st of March they were compelled absolutely to fast. Having been for some time accustomed to meager and inadequate nourishment, they passed the first day without much acute suffering, but on the morrow they began to experience the pangs of craving. Sir John and Mokoum, haggard-eyed, and sensitive to the gnawings of hunger, wandered over the top of the mountain; but no game whatever was to be seen. They began to think that, as the Colonel had said, they should literally have to feed on grass. If they only had the stomachs of ruminants, thought poor Sir John, as he eyed the abundant pasturage, they would be able to hold out; but still no game, still not even a bird! He gazed intently over the lake, in which the sailors had fished in vain; and it was

impossible to get near the wary aquatic birds that skimmed the tranquil waters.

At last, worn out with fatigue, Sir John and his companion lay down on the grass at the foot of a mound of earth some five or six feet high. Here they fell, not precisely into a sleep, but into a heavy torpor, which for a while benumbed their sufferings. How long this drowsiness would have lasted neither of them could have said; but in about an hour Sir John was aroused by a disagreeable pricking. He tried to slumber again, but the pricking continued, and at last impatiently he opened his eyes.

He was entirely covered, face, hands and clothes, with swarms of white ants. He started to his feet, and his sudden movement aroused the bushman, who was covered in the same way. But to Sir John's great surprise, the bushman instead of shaking off the insects, carried them by handfuls to his mouth, and devoured them greedily. Sir John's first sensation was disgust at his voracity.

"Come, eat, do as I do!" said the bushman; "it is the rice of the Bochjesmen."

And that was, in truth, the native term for these insects. The Bochjesmen feed on both the black and white species, but they consider the white to be of superior quality. The only drawback is, that they must be swallowed in large quantities to satisfy any longing for food. The Africans generally mix them with the gum of the mimosa, thus rendering them capable of affording a more substantial meal; but as the mimosa did not grow on Mount Scorzef, the bushman had to content himself with his rice *au naturel*.

Sir John, in spite of his repugnance, resolved to imitate him. The insects poured forth by thousands from their enormous ant-hill, which was none other than the mound of earth by which the weary sufferers had reclined. Sir John took them by handfuls, and carried them to his lips; he did not dislike the flavor, which was a grateful acid; and gradually he felt his hunger moderated.

Mokoum did not forget his companions in misfortune. He ran to the fort, and brought out the garrison. The sailors were without difficulty induced to attack the singular food, and although the astronomers hesitated for a moment, yet, encouraged by Sir John's example, and half dead with inanition, they soon at least assuaged the intenseness of their hunger by devouring considerable quantities of these ants.

But an unexpected incident procured for the starving men a more solid meal. In order to lay in a provision of the insects, Mokoum resolved to destroy one side of the enormous ant-hill. It consisted of a central conical mound, with smaller cones arranged at intervals around its base. The hunter had already made several blows with his hatchet, when a singular grunting sound from the center attracted his attention; he paused in his work of destruction, and listened, while his companions watched him in silence. He struck a few more blows, and the groan was repeated more audibly than before. The bushman rubbed his hands, while his eyes evidently sparkled. Once more attacking the ant-hill, he opened a cavity about a foot wide. The ants were escaping on every side; but of them he took no heed, leaving the sailors to collect them in sacks. All at once a strange animal appeared at the mouth of the hole. It was a quadruped with a long snout, a small mouth, and flexible tongue, which protruded to a great length; its ears were straight, its legs short; and its tail long and pointed. Long gray bristles with a reddish tinge covered its lank body, and its feet were armed with enormous claws. Mokoum killed it at

once with a sharp blow on the snout. "There is our supper," he said. "It has been some time coming, but it will not taste the worse for that. Now for a fire, and a ramrod for a spit, and we will feast as we have never feasted in our lives."

The bushman speedily began to skin the animal, which was a species of edentate, an ant-eater, very common in South Africa, and known to the Dutch at the Cape under the name of "aardvark." Swarms of ants are devoured by this creature, which catches them by means of its long glutinous tongue.

The meal was soon cooked; perhaps it would have been better for a few more turns of the spit, but the hungry men were impatient. The firm, wholesome flesh was declared to be excellent, although slightly impregnated with the acid of the ants.

After the repast the Europeans felt reinvigorated, and animated with more steadfast purpose to persevere; and in truth there was need of encouragement. All through the following night no light appeared on Mount Volquiria.

IT was now the ninth day since Zorn and Emery had started on their expedition. Their colleagues, detained on the summit of Mount Scorzef, began to give way to the fear that they had fallen into some irretrievable misfortune. They were all well aware that the young astronomers would omit nothing that lay in their power to insure the success of their enterprise, and they dreaded lest their courageous spirit should have exposed them to danger, or betrayed them into the hands of the wandering tribes. They waited always impatiently for the moment when the sun sank behind the horizon, that they might begin their nightly watch, and then all their hopes seemed concentrated on the field of their telescope.

All through the 3rd of March, wandering up and down the slopes, hardly exchanging a word, they suffered as they had never suffered before; not even the heat and fatigues of the desert, nor the tortures of thirst, had equaled the pain that arose from their apprehensions. The last morsel of the ant-eater had been devoured, and nothing now remained but the ants.

Night came, dark and calm, and extremely favorable to their operations, but although the Colonel and Strux watched alternately with the utmost perseverance, no light appeared, and the sun's ray's soon rendered any longer observations futile.

There was still nothing immediate to fear from the Makololos; they seemed resolved to reduce the besieged by famine, and it seemed hardly likely they would desist from their project. The unhappy Europeans were tortured afresh with hunger, and could only diminish their sufferings by devouring the bulbs of the gladioli from between the rocks.

Yet they were hardly prisoners; their detention was voluntary. At any moment the steamboat would have carried them to a fertile land, where game and fruit abounded. Several times they discussed the propriety of sending Mokoum to the northern shore to hunt for the little garrison; but this maneuver might be discovered by the natives; and there would be a risk to the steamboat, and consequently to the whole party, in the event of finding other hostile tribes to the north of the lake; accordingly the proposal was rejected, and it was decided that they must abide in company, and that all or none must depart. To leave Mount Scorzef before the observations were complete was an idea not entertained for a moment; the astronomers were determined to wait until the faintest hope should die.

(End of Part Three)

Beam Transmission

By GEORGE H. SCHEER, JR.

We are glad to present an interesting story by a new author. The narration is based partly on subconscious thought, as it seemed, although it was really produced by an unsuspected intelligence, and the results of it all lead to a species of beam transmission with effects most extraordinary and interesting. The denouement is quite startling, and is very well brought out in its detail.

Illustrated by MOREY

"I'VE been wondering," said Pearson as the three of us sat smoking in my room after dinner, "just what all of this means. Unusual is not the word for it."

"At times I believe it is foolishness and then again, it seems most logical to me," said Kroelich, our instructor in radio. "Bell, let's see those papers again!" I handed him the sheets he indicated. "Most unusual," he commented as Pearson and I looked over the older man's shoulder at the figures on the notebook leaves. "This is your third awakening, isn't it? Pearson and I each have had two, with more coming, I suppose. I cannot help but connect these things with our beam transmission experiments in the laboratory last Monday. Each of us was awakened last night. Let's see, we calculated the frequency to be very nearly eighteen megacycles when that feeling of numbness came over us, didn't we?"

Kroelich was referring to work Pearson and I were doing for our master's degrees in the University Post Graduate School. We had graduated in February at the mid-term and thought it well to continue our work until the end of the semester in June. Pearson had spent four years at the University while I had had my credits transferred from another and had come to Madison to finish my electrical engineering course. The two of us had met in Kroelich's classroom and decided to be laboratory partners. Kroelich was pleased that we were taking up advanced work for a higher degree and spent most of his free hours with us in our experiments with beam transmission of ultra-radio-frequencies. We had experienced considerable difficulty in reaching eighteen megacycles due to spurious capacitances in the wiring and tube sockets, but we were finally successful. After a few moments, during which time we were taking measurements to calculate the radiation frequency, the three of us felt a sensation of numbness. It seemed the same as that produced by cold, but it did not exist in a degree great enough to cause even partial paralysis. Kroelich immediately cut the plate battery supply switch, thinking that we were experiencing the results of an induced fever commonly associated with high frequency oscillations. The numbness subsided somewhat but did not leave us entirely until late that evening.

My expericence that night was much the same as those of Kroelich and Pearson. I awoke about two o'clock in the

We saw, at the end of the avenue, a great park with white groups of statues and fountains, but the angle of vision from our position was so narrow that we could see very little of it.

morning, and, when I had become fully conscious, I found I had taken some paper from my desk, turned on the light, and was rummaging about for a pencil. When I found it, I sat down and began to write out the fundamental formulæ for tuned circuits and the mathematical expansion of modulated frequencies. I knew them all, but it seemed, for the first time, that I grasped the real fundamental reasons. Also, I did not think about the fact that I was performing strangely for that time of the morning; it seemed quite natural.

I became more and more involved in the series, using hyperbolic functions, something I had always dreaded and feared, always hitherto using roundabout methods instead of employing them. I fell to using them without any consideration of the difficulties of manipulation. After an hour of work I felt satisfied that I had accomplished what I had started and went back to bed.

IN the morning I had not the slightest memory of the night's happenings, but I did see several sheets of the most appalling mathematical intricacies that anyone ever beheld. I had some recollection of having done it all, but I could not make head or tail of it after the beginning of the series expansion. I slipped the folded sheets into my pocket and left without thought of breakfast. This was not unusual because I never arose early enough for it, and, at that, I usually had to hurry to my eight o'clock classes.

I would not see Pearson until eleven, since we were not taking the same elective courses. At eleven we met outside the door of 301 and entered Kroelich's classroom. When we had reached our seats, Kroelich came up to us, and, without a word, put before us half a dozen sheets of figures. Immediately I wondered if he had had the same experience as I had the night before. At the same moment Pearson and I took similar sheets from our notebooks.

Pearson stared at me and stammered, "Did you——" but I interrupted before he could speak further.

"I did, and so did Kroelich from the looks of things!"

We missed most of the lecture for we were examining the three sets of calculations. Being post graduate students, we were more or less privileged, and Kroelich knew that we understood about all the text book had to offer after his explanations during our laboratory work. I doubt if he even thought about the lesson, for several times I noticed pauses in his lecture, and each time I perceived his gaze was in our direction.

None of the calculations were alike. Of the three, mine were the most logical from a common-sense standpoint. Pearson's had the appearance of very complicated audio-modulations with operators which seemed out of place but yet necessary to the expansions. Words cannot describe Kroelich's sheets. Imagine, if you can, networks of three dimensional calculations and diagrams of wildly distorted wave-fronts of the most bizzare appearance.

"What in blazes are these things?" said Pearson after half an hour. "I can't get beyond the first page of any of them. And to think this is in my own writing!" He indicated his calculations. "I should guarantee it a forgery, if I didn't have a vague memory of having written the stuff myself early this morning."

The remainder of the lecture made no more impression on us than the first half, for we were both occupied with our thoughts, trying to remember more definitely the circumstances of the writing the night before. The class bell awakened us from our thoughts. Naturally we proceeded directly to Kroelich's desk.

"I'll let Calloway take my one o'clock class," he said. "You fellows can cut, and we'll talk this over. I confess I can't make head or tail of it even though it appears I wrote it. Let me see your manuscripts?" After a short perusal of each, he handed them back to us. "Some sort of gibberish, but there must be something to it!"

OUR afternoon's conversation enlightened none of us. Kroelich suggested that we keep our news to ourselves lest we be proclaimed a triumvirate of second Einsteins. Personally, I had no desire to show anyone the figures I had written, especially since I could not explain them, and they were, therefore, utterly meaningless to me.

Then followed three days, on the morning of one of which Pearson and Kroelich produced continuations, apparently, of their previous calculations, and on two of which I had more of mine to offer. Strangely enough, though our subjects of calculations differed, similar operators were appearing in all of our figures.

"If only one of us had these spells," continued Kroelich in my room after we had again looked over the sheets, "I'd suggest a rest cure, but with three of us in the same fix, there seems to be no getting away from the significance of the thing. So far we have not even missed the sleep we've lost, and I know we don't feel the mental fatigue which only a fraction of this would cause if it were just to decipher it. The only course is to let the stuff come and see what it amounts to. Since the same operators are appearing in all of our works, perhaps the end is in sight. What we'll have remains to be seen, though even if I did believe in it, heaven only knows what we should do with it, if the ultimate results look anything like these pages!"

Two days later we each had a group of what appeared to be fundamental formulæ of some nature, results of combining all of our previous calculations. Kroelich had asked the head of the mathematics department, Dean Harvey, to view what we had. When the latter arrived in the laboratory we were operating the bean transmitter, just as we had been doing the day we experienced the strange numbness.

"Good afternoon, gentlemen!" the old man greeted pleasantly. We returned his salutation and were waiting for Kroelich to approach the subject, when a very queer look spread suddenly over the dean's face. He steadied himself as he stepped forward to keep himself from falling.

"I'm all right, boys," he said after a moment. "I had a feeling of numbness. Apparently my years are weighing on me more than I know!"

The three of us glanced momentarily at each other as the radio instructor opened the oscillator plate circuit. After a few moments for suitable words to introduce his subject, Kroelich began the story of the strange writings which he assembled from the top of the table. The dean was now one of us, and would undoubtedly experience the same nightly phenomenon.

Harvey pursed his lips as he went over the sheets. "Strange indeed," he muttered, "yet logical in every way. There must be a key somewhere. The operators suggest that. These final equations appear ready for solution by merely substituting values, scalars I should say. But without them, there is no way out of the tangle. May I take them along? You say that the numbness will be gone by evening? Thank you, Pearson." Pearson had given the professor his hat as he arose to leave. "I shall be back to-morrow afternoon with what help I may be able to suggest."

After he had left we felt hopeful, for, if anyone could help us, this man could.

"To-morrow," said Kroelich with a grin, "there will be a foursome of Einsteins!"

I SLEPT badly that night, but I did not do any more writing. The next morning I found that neither Kroelich nor Pearson had either.

"I wonder if Dean Harvey found the key?" This from Pearson as the two of us sat at the counter, downing a none too savory lunch. "Funny there is nothing like it in any of the radio publications Kroelich has looked over. Yet, it is all fundamentally radio frequency work. Why does that numbness come to a fellow the first time he's around the transmitter when it's working, and why should it have anything to do with the 'revelations' if that is what they are? I hate to just sit around and wait for things to turn up. Every day I more firmly believe that we'll have something different if ever we untangle that mess of formulæ. We'll have a thesis topic anyhow," suggested Pearson rather absently. "Those figures would be acceptable because no one could dispute their validity!"

"You always do think of material gains," I said rather disgustedly. "What I want to do is to really use the stuff. Maybe it's a new form of high efficiency power transmission or something like that!"

"Power transmission," mused Pearson. "Say, do you think——?" He stopped, but his eyes had brightened. Another wild dream! "Not such a bad thought at that," and he attempted to conceal his excitement over his new idea.

I wondered why the secrecy, but said nothing. "Let's go over to the lab. Dean Harvey may be early." With that we left.

Harvey and Kroelich were very excitedly talking and figuring when we arrived, so absorbed, in fact, that they did not notice our appearance but took us into their conversations the moment we bent over the desk. Undoubtedly the dean had had quite a sleepless night, for he had fourteen sheets in his cramped figures before him, and, if ours had been strange, his were doubly so. However, it took but a moment's notice to see that he had converted some of his values into characters familiar to us, the italics and Greek letters commonly used for wavelength, velocity and other quantities.

Such a thing is unthinkable, yet here it is," he was saying in an excited manner, his facial expression lifting twenty years from his rounded shoulders. "It means the velocity of light may be multiplied by any factor in actual practice. And furthermore, look at this! It means that objects can be broken down and transmitted, modulating a specific group of radio frequencies, and set up again, in order, at some distance, so rapidly that I should think no appearance of melting away would be visible. It would simply mean here and then there!"

Undoubtedly the dean had had a revelation which far transcended ours by comparison. Kroelich, apparently had followed the train of thought, because he and the professor of mathematics continued on in words which suddenly took them above the students' plane, however elevated.

"WE are being rude," observed the dean after half an hour of discussion which was lost on the two of us. He was wiping his high forehead with his handkerchief.

"Gentlemen, we have in our grasp that which has never been imagined possible. Kroelch will agree that such instruments are feasible even to us!"

Eager as a youngster he insisted we observe the strictest secrecy. No need to tell us that now, for we were selfish enough to keep such a discovery to ourselves.

"A thesis subject!" I suggested sarcastically to Pearson.

"To blazes with the thesis!" he retorted. "We're rich. No more express companies; a world monopoly for us!"

"What if it doesn't work after all?" I asked, because I could not help but doubt such a fanciful idea becoming practical.

He had forgotten everything real in his excitement. "It will, old man, it will!"

No use to spoil such dreams until the test. It was such a wild improbability. Why should such a power be placed in the hands of four chosen men, with less merits, perhaps, than many other people?

It seemed strange as a dream when I sat alone in my room, looking out over the familiar street with its rumbling trucks and rushing automobiles. What if it could be? It would require power, of course, but friction between molecules might not make necessary more power than that in the average truck motor. No noise, no traffic involved either. With these thoughts I picked up a text book, half believing, half unbelieving. Lessons suffered because visions of huge transmitting and receiving freight and express stations continually came before me. Conscentration was an impossibility!

The experimental glass-working department of the University was kindly enough building up the dozen tubes required for our apparatus. Were it not for Dean Harvey, we should have had no idea of making the thing a practicability in the form of usable instruments. Once the factors were known, Kroelich, Pearson and I had little difficulty in designing plates and grids for definite tube constants, though they were a bit alarming in shapes, sizes and combinations. The modulator tubes required four grids with four cathodes and one plate. Indirect heating from a unipotential source was a necessity.

"Otherwise," observed Kroelich, "our transmitted objects might have one hundred and twenty cycle ripples all over them!"

Though said in a joking manner, it would no doubt be true. Dean Harvey had had one more night of writing which gave him some idea of the order of things and the methods of procedure, but the three of us had had no more nightly inspirations.

By the end of two weeks we had the tubes. Fortunately enough, the required frequencies were in no instance higher than eighteen megacycles which appeared to be the main carrier, though it was doubtful as to what any frequency would be after the mixtures and additions which were to take place in the apparatus.

"I only hope it doesn't blow up and we with it!" I observed skeptically with a laugh as we were carefully building up the inductances of copper tubing one day. Excited as usual since we had begun our actual construction, Dean Harvey seemed one of us, even in age, as he offered help and suggestions every few moments.

"I've been wondering," he mentioned at one time, "what would happen to living things if we tried to transmit them?"

None of us said a word, not because we were too busy, but because some of the same thoughts had been in our own minds from time to time. Once before Pearson and I had said something about it rather jokingly. Such a thing was not to be dreamed of. At the time, the circuits were intricate enough to keep our minds from wandering to the limits of such an instrument if it worked at all.

THE day for our actual tests arrived. I fairly tingled and even felt a sinking feeling within me as I looked over the finished transmitter. I believe that my feelings were common to the two younger men, but as for the professor, I have never seen anyone quite so eager in all my life. Our hours together had been most happy, and we learned to know each other as only closely associated men can. Probably the possibilities of our discovery, if it could be called that, and the secrecy involved, kept us from talking much to others about anything, lest we drop any hints. I don't believe any of us had thought of anything else from the time we began the construction.

"What will be first?" asked Pearson.

"Anything will do," said Kroelich.

"Here's my watch!" said the dean as he pulled it eagerly from his pocket and placed it on the pedestal at the focal point of the carrier wave.

"Let's try something less valuable," I suggested as I reached for it, but the professor would have none of it. I had a definite feeling that nothing would happen anyway after the many weeks of planning and working. Rather than excited, I felt suddenly quite indifferent and cold, as the everyday things of life came before my mind. Yet, we feel contempt for what we know to be facts. Life itself, even in a single-celled animal or plant, is a thing marvelous beyond compare. Man, in his glory, cannot create even a single cell and endow it with that spark called life. Try as I would, I could not shake off generations upon generations of belief and instinct. It just could not happen! We had been hoaxed.

Dean Harvey had written up two sheets of directions for manipulating the various controls and the sequence of operating them. One by one the switches were closed. We had placed the receiver, simple compared to the transmitter, at the other side of the room. The former consisted of a detector or demodulator and a differentiator. Not trusting whatever the resulting actions of apparatus might be, we had placed the controls at least thirty feet from the transmitter. Kroelich was throwing in the switches cautiously, watching anxiously for any untoward happenings, while Pearson and I, none the less attentive, were near him. Dean Harvey had his nose almost on his watch, and only after repeated entreaties would he move more than six inches from it.

There was not a sound. The only appearance of life was the dull glow from the cathodes, the more brilliant filament ends and ionization in two of the tubes.

"Soft," I observed when the plate voltages had been applied.

"Not dangerously so, I hope," commented Kroelich when he had seen them.

He trembled perceptibly as he touched the last switch. In spite of my indifference, I felt my knees quaking under me.

"Here goes!" shouted Kroelich.

Nothing happened! We felt the disappointment keenly, but I had fully expected nothing more. Dean Harvey heaved a sigh that was almost a groan. We all stood around the rather pleasing array of what was after all, junk, before us.

"Say, what is this?" exclaimed Kroelich. "I forgot to make the tie connection between these two differentiators!"

I'll admit the second trial did make me feel a little differently. I began to wonder if something would happen. Again Kroelich's hand touched the last switch. It trembled more than it had before. After several moments hesitation, he dropped it to his side.

"SILLY, I know," he said, "but I can't do it!"

Dean Harvey ran to him and slammed in the switch. There was a crack, a sudden cold breeze, a faint glow of ionization of the air in the path between the transmitter and the receiver, and the smell of ozone. The watch was gone! We ran to the receiver and saw what must have formerly been the watch, but it looked more like a metal duplicate of a fried egg than anything else I could think of. At the time we forgot the sad plight of the professor's watch and danced about shouting, at the tops of our voices, various incoherent words to the effect that we had been successful.

After the first violent reaction, we were partially dazed. I tried my luck transmitting a half dollar, but the result was again discouraging, for the silver assumed a shape, after transmission, of a miniature bird's nest. We tried a few more small objects, but the results were always grotesque figures which in no way resembled the originals. On each was a ripple which, Kroelich said, meant the need of a filter on our filament supplies in spite of cathode construction.

"Our trouble, however, though it may be serious," said the radio instructor as we sat around his laboratory desk later, "does not alter circumstances. We have succeeded in doing something heretofore unachieved, undreamed of. Even if we never succeed in transmitting things as they are, metals and the like will not suffer by a change in physical form. If the process is not too costly, ores may be transmitted. Of course, we do not know as yet the range obtainable or just what would happen if we transmitted an object and the receiver were out of range. Where would it go? All of these facts must be discovered."

Apparently Pearson had not been paying much attention to the instructor's discourse for he jumped up suddenly and asked Kroelich to put the instruments into operation again. He put what had been the watch on the pedestal and once more it was transmitted, this time resembling the leaf of a cabbage. Nothing daunted, he placed this on the pedestal the third time with the astounding result that the watch appeared at the receiver as it had been before with the exception that it was covered with tiny ripples, but it was otherwise identical with the original timepiece.

"I know what is wrong. It was——," before Pearson could finish alone, the four of us said in the same breath, "Third harmonic," and once more we jumped about.

I am glad that none saw our wild antics, or we should have been taken for what we were, crazy men. Two days were necessary before we found the faulty circuit and introduced the necessary filter to suppress the distorting harmonic. We found the amplitude of it to be six times that of the fundamental. The filament-hum filter was easily added.

After these changes, we were assured that there were no limits to the possibilties, all within our grasp. We moved the receiver to my room, constructed the necessary control panel, and focused the transmitter on it. We had found that opaque materials placed between the two instruments in no way affected the transmissions. The distance separating the two units was now a little more than half a mile, but it seemed as simple as the former twenty feet!

One day, shortly after we had successfully transmitted from the laboratory to my room, the professor brought a little white rat with him.

"THE sacrifice!" he announced. "Bell, go over to your room and catch this little fellow when he arrives on his visit."

I thought the dean too over-confident, but, after all, if it did come through alive, I should not be surprised greatly after what we had already accomplished. I reached my room and waited. A sudden snap, and there was the rat, but it was dead. I called Kroelich and told him the sad story. Then I once more proceeded to the laboratory, vaguely wondering why the white rat had been just as before, but without the vital spark of life. When I arrived, the dean was in a deep study. Evidently he believed it entirely possible to transmit the life as well as the body, all in one.

"Kroelich," he said at length, "you will remember I said the velocity of light could be multiplied by any factor in the different stages of the transmitter. We have forgotten all about it, I am afraid. Step it up about ten times. It is the fourth control on the left. Bell, you go back to your room. I'll be back very shortly with more rodents. When you phone back success, we'll know how high we must go. Until then please stay there. We'll advance by easy stages until we do succeed as I know we shall."

THREE mice arrived at intervals of five minutes, all dead.

"That was five hundred times the velocity of light," commented the dean after I reported the failure of the third transmission. "Stay there until we run out of mice."

Then followed three more, dead, but I did think I saw a quiver in the last one just before I touched it. The fourth was a perfectly normal mouse which immediately hopped to my bed and scampered about in a bewildered way. After a few moments it crouched quietly and remained so. I wasted no time in giving the three men in the laboratory the report.

"Stay there, stay there!" shouted Pearson.

After three more mice there was a pause of half an hour, for what purpose I could not imagine, but suddenly I knew why. One after another came a rabbit, a guinea pig, a kitten, another rabbit, all perfectly normal a few seconds after transmission.

"Quit!" I told Kroelich over the phone, "before I have a zoo here. Yes, they are all apparently all right."

Fifteen minutes later the three were in my room, the professor of mathematics grinning like a school boy. These moments of happiness were far from his ordinary demeanor. He had aged in the few months we had been associated with him, aged years. Perhaps it was over-enthusiasm and over-work, coupled with the recent loss of sleep, due to our activities? Oh perhaps his digestive system was suffering with age?

"Well, boys," said the dean, "nothing remains now but to enlarge the apparatus to accommodate larger objects, for instance, a man!"

He was mad! The strain was too much for him, and he was cracking under it. Who would voluntarily take a risk as great as that? And to what end? Aeroplane transportation was rapid enough to prevent any great waste of time even for the busiest of individuals.

"Bell, the velocity we used when the mouse arrived alive was better than a million times the velocity of light, more than 168,000,000,000 miles per second! In a molecular state acceleration had no deleterious effect on organic matter. It means that nervous systems require the most rapid transfer imaginable, if they are not to have fatal consequences," Harvey had changed the subject after his previous startling remark when he saw the looks of horror on our faces. "The velocity may be increased indefinitely with no further effect. It may be necessary for greater distances, since it

appears the total lapsed time is what matters."

HE enlarged the instruments for transmitting larger inanimate objects by paralleling all of the stages and adding again as many tubes. The three of us had at once put from our minds all thoughts of transferring human beings, though we said little about it to the professor.

Our revisions were complete. The work had been hurried at the last to finish late in the evening. Pearson came to my room, and, lighting a cigarette, he stared absently at the desk lamp.

"You know, Bell," he began, "there is something behind all of this which we have overlooked, I believe. Such inspirations would not occur to four men, night after night, without some very definite reason or cause. You and I are going back to the laboratory tonight and are going to try something. You know, I've had a hunch from the very beginning of it all, but it sounded too improbable, freakish, in fact. Let's go over now! I have the keys."

Without much hesitation I followed him. After switching on the lights he threw the transmitter switches one by one. Then he swung the reflector of the beam slowly over an imaginary pattern, covering carefully the area in the direction our first beam transmitted had radiated.

"Wait!" was all he would say when I questioned his actions.

For half an hour this continued. "That should get them!" he finally said as he again focused the beam on the receiver. The latter had been moved back to the laboratory for enlargement with the transmitter.

"Get whom?" I asked in astonishment.

Pearson said nothing, but, leaving the instruments operating, drew up a chair, and, lighting a cigarette, crossed his legs as if to wait for something which he was sure would happen. I did about the same, wondering just what he hoped would happen. I became restless after fifteen minutes or so and began pacing back and forth trying to get a word from Pearson.

THERE was a sudden crack, a blue corona and a tingling sensation. Both of us sprang to the receiver and beheld a small red object apparently made of some metal.

"Can we touch it?" I queried.

"If it isn't hot or something, why not?" said my companion as he picked it up carefully.

"What is it, and where did it come from?" I asked as I examined the little figure.

It looked like a misshapen chunk of metal, but it had evidently been carved or molded into a definite shape. The central portion looked circular in shape and had many tiny appendages around the periphery. On one flat side was a lump resembling a head with two eyes, apparently widely separated. One small hole was set between them, slightly lower, with a wide mouth below it. Outside of these and two circular portions at the side of this malformed head, there was nothing human or even animal about it. On the other flat side were two tentacles which were, in length, about three times the diameter of the disc body. Each tentacle terminated in seven digits like fingers but without nails.

"Looks like an example of cubist statuary," I suggested laughing.

"It is a statue," said Pearson in all seriousness," and it came from outside space somewhere!"

"What!" I exclaimed. "Do you mean to tell me that——"

"All the facts point to it. Our trans-

mitter beam must have been intercepted by some other beam in space. We were naturally in the path, and it split up after numbing us, never leaving us after that first day. Dean Harvey came under the influence himself, and through these we were directed to write out the formulæ in our own language and directed to build the apparatus. It was therefore not meant to be a commercial gift to us, but a means of communication with God knows what! We have established a link which will enable us eventually to discover the source of our amazing information. I'll get Kroelich and Harvey, and you just watch their eyes pop out when they see the present we were sent *via* the receiver. What it is is hard to guess."

Pearson had just left the laboratory when there was another snap and pungent odor of ozone. Another statue had appeared, this one a naked man! This was indeed astounding. The figure showed intelligent, clean-cut features this time, and it was made of a silver-like metal resembling pewter. The proportions were identical with those of a human being of the earth.

I had just completed a close scrutiny of it when there was another snap. This time it was a statue of a three-legged animal with a neck like a giraffe. Just then Dean Harvey, Kroelich and Pearson came in. I showed them the collection to their amazement.

DURING the next hour we received six more statues of animals, followed by three of trees or objects similar to the earthly counterparts.

"I don't doubt that you are correct in your surmises, Pearson," commented the professor. "These can be only miniatures of the fauna and flora of another world. It is utterly impossible that anyone else on this earth has such a transmitter and is hoaxing us. We shall send them samples of this world in the morning. I cannot understand, however, why the figure of the man was sent after that first odd object. Could it be——? Hm!" And Dean Harvey changed the subject. "No telling what tremendous distances have been covered when we consider that the factor of multiplication may even have exceeded by far the velocity of light itself. The velocity of light squared would be a velocity inconceivable to the average mind, yet apparently this is only a relatively low figure considering our own experiments.

"Nice little collection we have, but people, hidebound, would only laugh, if we told them what we thought them to be. Not a word about it as yet, fellows!"

Next morning Pearson and I went shopping for the common china and metal figures of men and women, dogs, cattle, and the like, and brought them to the laboratory.

"Before we send them, we must sterilize them thoroughly," warned the professor.

Those words, we learned later, were the link to the basis of the entire project, one so bizarre that it would stagger the mind which first realized the truth. That we were dealing with a superior intelligence remote in space could not be doubted.

"No doubt they have taken the same precautions, or we should not be alive now after handling these objects. They must have carried millions of bacteria which are now dead, or, unsuspecting, you two fellows might have brought death to the population of the entire world. Such a thing is within the range of possibility. Through generations upon generations we have acquired a partial immunity to bacteria in not too large numbers. In each of our bodies there are probably specimens of

almost all disease bacteria, but they are kept from multiplying and causing symptoms of these diseases because we are more or less immune to them. When our bodies are physically depleted, some of them may take a foothold. We have developed toxins, antitoxins, toxin-antitoxins, bacteriophage and the like to fight them when they become virulent. A white man in the tropics becomes an easy prey to fever, while the natives are immune. North American Indians had no immunity to white men's diseases, for they had never contracted them before. Hence they died from smallpox and measles. Allergies are somewhat similiar. Contact with foreign proteins causes what we know as hay fever. Many of us are immune from age-old contact with these proteins, which do not irritate our membranes.

"WHAT could we do if suddenly new forms of bacteria or protozoa suddenly appeared on the earth? Before any means of combatting them could be prepared, the population of the world would probably have disappeared! Undoubtedly our objects will be received in an hermetically sealed room and disinfected before the other intelligent beings examine them. Because they figured we should overlook such a fact, they took care of the disinfecting before they transmitted these statuettes. That indicates they are not avaricious, for they could have annihilated us easily."

Kroelich produced some antiseptic from the first aid cabinet, and we thoroughly sprayed our china and metal images. Then Kroelich put the transmitter into operation.

"What velocity, Professor Harvey?" he asked when he came to the velocity multiplier control.

"Try a billion times," was the answer. "We cannot tell how far away they are, and the added speed cannot do any damage. We should waste as little time as possible!"

Every fifteen minutes we sent out into space an image until our supply was exhausted.

"That should be enough for to-night. How long did you have to wait until you had your first statue after you had started the transmitter?" asked the dean as he turned to Pearson.

"Roughly, half an hour," was the reply, "but how do we know what velocity they employ?"

"We don't, of course, but I should judge half an hour will be sufficient time."

So, for a half hour we talked over the possibilities of carrying on intelligent communications with out distant neighbors; of transporting materials from one world to another; of the possibility that platinum and gold were abundant there, and that in return we might be able to send them what were common materials to us, though rare on their planet, in exchange. I must confess that our dreams became quite wild by the time Kroelich rose to shut down the transmitter, and, usually so practical-minded, the dean had kept pace with us all along!

THE next morning found us eagerly awaiting more transmissions from the far-away world.

"They will be of an intelligent nature, no doubt," commented Dean Harvey. "I should say writings and the like."

After twenty minutes of operation, there was the usual instantaneous corona and loud snap. Before us, on the receiver, was a thin sheet of parchment, and on it, a triangle, circle and square, drawn with black crayon. The professor, whose joy could only be imagined, hastily drew the same figures on

a piece of paper and added three dimensional figures as well, a cube, cylinder and pyramid. This was transmitted immediately. Back came a single figure, a right triangle with squares drawn, each having as an edge one side of the triangle, and each divided into smaller unit squares.

"To indicate the sum of the squares of the two sides equals the square of the hypothenuse!" exclaimed the dean eagerly. "They've had a Pythagoras too!"

For the next hour we exchanged familiar geometric and theorems, which could be illustrated by figures. I suggested a language lesson, but Kroelich indicated the difficulty, showing me that we had no things in common for a basis.

"Imagine if you can," he said, "explaining such a thing as color to a person who was born blind. Here of course we can transmit a paper with colors on it, but it will serve as an example. How would you explain red, for instance? You would name red objects, ten to one, and yet how could a blind person visualize the color? You could say that it was the lowest frequency of the visible spectrum, just above the infra-red or heat waves, but that does not describe the effect on the retina of the eye and the sense of color received by the brain cells."

However, the dean acted on my suggestion in-so-far as to write the numbers to ten, drawing first the number of squares, and then placing the numbers beside them. We received the same in turn, but the characters were quite strange to us, as would be expected.

FINALLY Dean Harvey exclaimed, "I'm going myself! Then we'll have a medium of exchange."

"We stood aghast. "No!" we said almost simultaneously. How did he know what the temperature would be; if the temperature were fit for human lungs? He retaliated that the human figure we had received was identical with our own species. We argued that was not sufficient proof. On the other worlds adaptations would not preclude the possible existence of substances poisonous to beings of our world. But in the end we lost as we knew we should. Ever since he had first suggested the transmission of animate objects, we had feared the outcome.

The transmitter was turned off and the dean took a blank notebook with him as he sat on the now enlarged pedestal.

"I know I'll be all right, but in case something should happen, my affairs are all arranged. I am an old man, all alone, with little for which to live, and this is my greatest desire. Please be good fellows! Keep both instruments operating and you will get messages in good old English, and, I'll guarantee, the strangest mortal eyes ever beheld!"

Pearson finally said he would do it, and, one by one, the switches were thrown in. The velocity control was at a factor of a billion times. Now all of the switches were in but the last!

"I don't feel a thing!" said the professor. "Go right ahead."

Pearson closed his eyes, and, in visible agony, threw the last switch. The dean was gone! I felt mighty unsteady and dizzy from the nervous shock, but the three of us did the best we could under the circumstances by grouping ourselves about the receiver. We waited for ages.

Perhaps it was only a few minutes until there was a snap, and a page of the professor's notebook appeared before us. On it was his cramped writing, "All right, fellows. I am in a glass room to prevent, I believe, my bacteria from getting out. Before me are the strangest things I've ever seen. There are none of the men here, only the mon-

sters similar to the first statue we received. They are the intelligent creatures of this world beyond a doubt. Though every bit as ugly as our model of them, they are not an evil appearing lot. It seems they anticipated the fact that I might want to transmit messages back to you, and took the paper after indicating that I was to spray it with a little atomizer in this cell. The transmitter is queer looking, but, after all, it resembles ours to some degree. I have also examined the receiver in the compartment with me and find it not unlike our own. At least the conductors are copper and the walls of the tubes glass. I created quite a surprise on my arrival to judge from their apparently animated conversations, but they seem to be grateful that I risked the trip to visit them."

THAT was all. Where was he? The direction of the transmitter did not fall near any of the planets of our system. Perhaps he was on a system remote in our galaxy or perhaps even out of that! How long had it taken him to make the journey at one billion the velocity of light? I hastily wrote a note asking the professor to time the arrival. He had always prided himself on the accuracy of his new watch, (we had not been able to iron out the one hundred twenty cycle ripple on his old one), and in the laboratory was an electric clock. Certainly the distance was great enough to get some idea of its magnitude. I gave the time of transmission, and sent it to the second.

Back came the message, "No measurable lapsed time."

Kroelich cut down to a factor of one thousand times the velocity of light and we tried again. The same answer came back. Next we tried the velocity of light itself, but still the professor could not measure the interval. We began to look at each other in surprise. Three or four seconds should be noticeable. That would make the distance roughly half a million miles, and what body was that close to the earth? Yet the indications were that it was even closer. I began to think that something was quite wrong.

"Here goes the reversing switch," said Pearson as he changed the multiplier to a divisor. "Half the velocity of light."

This time the dean showed surprise and inquired if everything were in working order.

"One hundredth, or only 1860 miles per second," said Kroelich.

Still too small to measure was the report. One thousandth and no better.

"Let's make the change a big one and check the apparatus. Something is very surely wrong," and Kroelich switched to a millionth the velocity of light.

"Noticed a fraction that time," was the professor's report back to us.

One billionth. Something was out of adjustment.

"That is only about a foot a second!" I said after a rough mental calculation.

"Nevertheless, here goes," answered Kroelich. "We must find the trouble."

"Forty seconds!" reported the professor. "What factor?"

We told him and he agreed with us that it was an impossibility.

"Switch to one billion times. I am coming back!"

In a moment the professor appeared, none the worse for his long journey apparently.

"Forty seconds for forty feet. Impossible," he said shaking his head decisively. "That would put it over in that brick wall, which would never, never do! My watch checks the clock to a second too. We shall have to find the mistake." He went into details describing the creatures he had seen. "I don't know why they didn't fumigate

me and let me out," he continued in a disappointed manner. "Perhaps they were afraid of what I might do to them; a violent character from an unknown, partly civilized world, or something of that sort!"

THAT night, after finally falling asleep after the day's unbelievable happenings, I awoke with a start with the four words, "forty feet, forty seconds," running through my mind. Suddenly I sat up in bed. If distances in our own solar system were relatively the same as those of the supposed atom, why could not life be possible on an electron, such as we thought the latter to be? Why could not all of the stars we could see in the sky be protons with their planets the electrons of some macrocosmic system? Was there a limit in either direction? Were the relative distances and structures merely accidentally the same?

Such nonsense I told myself, but I could not sleep. I realized suddenly that I was trying to prove to myself that the dean had been only forty feet from us all of the time, tremendously reduced in size of course. But what could cause such a reduction? What would make his molecules shrink accordingly? If they had not, he would have been all protons and electrons with no space! The energy needed to force all of the electrons from their orbits would have been more than a human mind could conceive. There would have been no professor, as we had known him, if that process had taken place. He could not have been in the wall in a microcosmic planetary system, that was all there was to it! The minutes he had been away from us would have been thousands of centuries on an electron. Yet scientists were agreeing there was no such thing as time; we merely measured intervals by means of seconds, minutes, hours, etc. Yet would not full lives seemingly be lived to men, assuming the possibility of life on an electron, in a bare fraction of a second ticked off by an earthly clock? Perhaps, after all, there was nothing definite about time!

After a few more attempts at an explanation, I fell back to sleep. The next morning I was in as much of a muddle as before. Why did my idea persist when I knew it could not be? I would say nothing about it to my friends because it seemed so absurd.

And yet, during the next two days, all of the checks we made proved that the indicator was correct, and the idea I had had was more firmly fixed in my mind. Its unreasonableness kept me from mentioning it, though I wondered if Pearson had similar thoughts to mine.

"IT seems we must accept things as as they are until we can get an astronomical chart from the strange world, or give them one of ours, hoping that they, with it and their advanced science can point out their location in our galaxy, if they are that near us," said the professor after we had given up trying to solve the riddle. "There is no link to show the reason for this tremendous discrepancy. Why not all of us take the trip? My words can never give the impression you will get when you have seen what I saw!"

"Never!" I said to myself, but the next afternoon, after the dean, Kroelich and Pearson had taken the voyage and sent reassuring messages, I found myself on the pedestal as if in a dream. It could not be real, and I believe I actually laughed out loud, rather hollowly, no doubt.

Calloway, Kroelich's junior assistant, had been taken into our confidence and was at the controls of the transmitter. I was cold through and through, as,

one by one, the switches were closed. As Calloway touched the last switch handle, I had a mad desire to jump, but fear had paralyzed me, and, suddenly, I was whisked from the light through the briefest interval of darkness and into light again.

ABOUT me were my three friends, smiling, each with reassuring words on his lips.

"Not bad, was it?" inquired Pearson with his hand on my shoulder, "and look!"

I did and stared in wonder at the sight before my eyes. Yes, they were alive, but what a nightmare! Four monsters, living discs fully as great in diameter as an average man's height with tentacles eight feet long. And what faces! Still, there was no ferocious expression, only what I should interpret as eagerness. They were a deep red color and had large, piercing black eyes. All were reclining on an edge of the disc which seemed to be the body proper, resting it to keep it from falling flat by means of the smooth, snake-like tentacles. All about the periphery of the disc were two rows, one on each edge, of little cup-like appendages. There was no sign of hair or clothes with the exception that small discs of metal on cords were about their stubby necks. The ears were membranes about the size of a silver dollar on the sides of the head on the surface. The hole between and below the eyes was undoubtedly the breathing tube. The lips were not heavy, but the mouth was very wide, lending rather an unpleasant expression to the face. The teeth were quite like human teeth in shape, quite uniform and black as ebony.

The dean, an old friend by virtue of his previous visit, was naturally our spokesman. At the time he resorted to gesticulations and sign language. First of all he tried to show the creatures that we wanted to leave our prison of glass. In response, one of the beings pressed a button on the wall, and shortly after, a man entered, not a bit different from us except in his manner of dress. He wore a tunic which fell to his knees, and on his feet were sandals. His features were classic, while his hair was kept from falling over his eyes by a red band about his head, crossing his forehead.

HIS attitude was not that of a servant for there was no suggestion of servility in his manner. After a short conversation, while he was kept from us by the intervening sheets of glass, the man left the room. Nothing transpired for some time, so I took in our compartment. It was entirely made of clear glass. There was the antiseptic atomizer the dean had mentioned in his first message. With the exception of insulating materials, which seemed to be of a sulphur basis, the receiver was not unlike our own. The transmitter in the room outside, was a bit larger than ours, but it was recognizable as the counterpart. The room was lighted indirectly by means of several hanging, translucent bowls. The walls were smooth and white, the material was similar to gypsum plaster.

The creatures were standing, if it could be called that, about a table near the transmitter. On the wall behind the latter was a control board, and, to one side, a series of buttons, one of which had summoned the man to the room.

I cannot guess how much time elapsed until the man had returned with three companions, because the strange surroundings were of such interest. Each had what turned out to be thin, light, hermetically sealed suits with removable transparent helmets. On the front of each was a disinfector like a gas mask, allowing free intake of air for breathing but sterilizing it and the exhaled breath

as the latter passed out to the outside air. Apparently there was little difference in the composition of their atmosphere from ours. I learned later that the oxygen content was a little lower, the difference being made up by nitrogen. Also, little difference existed in the force of gravity of that world from our own.

The suits were placed in a small glass chamber adjoining ours. The door was closed, and the first man we had seen indicated we were to open the door leading from the small chamber to ours and don the suits. They had been sprayed after having been placed in the small compartment to safeguard us. Without much hesitation and little discussion we did so.

"We shall spray each other to eradicate the effects of touching the suits," said the professor before we connected the helmets, which were secured by a quarter turn.

After that, we used sign language between ourselves, since our voices were inaudible through the helmets. As we sprayed each other, the creatures and the four men showed pleasure that we grasped the meaning of the whole procedure. The creatures' mouths curled into what must have been smiles or grins, while the expressions on the men's faces were those of happiness of normal people as we know them.

AFTER we had finished our disinfection, we passed through the two glass doors and stood before the group. Only friendliness was apparent, though we could hardly judge the superior beings by their expressions. We were happy when the man we had first seen, after a few words with one of the creatures, led us from the room to a corridor, into which opened many doors at regular intervals. We entered an automatic elevator not much different from those on earth, and, at a rapid rate, descended. After perhaps twenty seconds the elevator came to a stop, and we stepped out into a corridor similar to the one many stories above. Our guide opened the first door and motioned for us to enter what were apparently our living quarters, a suite of five rooms with comfortable lounges and pillows. The general impression was that of earthly oriental luxury.

After ten minutes of gesticulation, the guide succeeded in explaining to Dean Harvey that we could remove our suits in our quarters, but we must wear them when we intended leaving it, using a disinfectant as before. Then he nodded and closed the door. We immediately took off our suits with various comments of wonderment over what we had seen. Pearson was the first one out of his suit, and reached a window before the rest of us. Below, many stories, was a wide avenue, while all about were glistening white towers and massive structures graceful in spite of their immensity. We saw, at the end of the avenue, a great park with white groups of statues and fountains, but the angle of vision from our position was so narrow that we could see very little of it. The other end of the avenue continued as far as the eye could reach with tall buildings hemming it in on both sides. A number of cross-streets were also visible at regular intervals.

A sun was shining in the heavens somewhere, but the most startling thing was that the sky above was a bright carmine in color. Fleecy white clouds drifted across this (to us) amazing background, blown by a breeze we could not feel in our closed apartment. Dean Harvey forbade us to attempt opening a window.

"Apparently I was correct in my ideas of contamination," he said without any pride. A man of his learning makes statements of facts without even expecting to be refuted and finds no satisfaction in their ultimate proof, for he knows

the truth when he states the facts. Hence, to him, no denial is even imagined.

"That sky is startling," he continued at length, "but we are forever judging by earthly standards. When all of the facts are considered, it is really a wonder that men exist at all on this world, much less so near in scale to the dominant beings. Why should evolution choose our type to be supreme or even intelligent on every inhabited planet, as probably all of them are inhabited? Why should life be impossible in atmospheres composed almost entirely of hydrogen or in temperatures too low for us? Why should muscular energy require identical metabolisms and anabolisms as ours? Why should oxygen be a requirement when energy may be released in other combinations such as aluminum and many other elements with chlorine, or why a liquid circulatory system such as ours? We are hidebound and narrow, without any vision! I am surprised that this world is as similar to ours as it is, especially with regard to atmosphere, but this fact is very important to us, naturally, probably existing in very few of the myriads of solar systems. We are the first extra-terrestrials to visit this world. We may of course be rightfully proud and feel highly honored, but it has been duplicated countless millions of times in other systems. The universe is without end, infinite in the fullest meaning of the word. What wonders must exist in the glory of the starry firmament we see about the earth!

"WE ARE most assuredly in a very remote system, unless the fine dust particles which give color to any sky are much different in this world. The sun seems to give what we would call white light. Our own sun is really red in comparison with some of the stars anyone may see. Every star undoubtedly has its planetary system like our own, each system similar to the structure of an atom with the sun as the nucleus of protons."

An atom! I had forgotten my previous thoughts, but the professor's reference to it gave me a sudden start.

"I hope we are conducted on a tour of this city!" said Kroelich at length.

After watching the amazing sky for some time, occasionally seeing torpedo-like aircraft sailing far above us, too far distant for us to make out any details, we watched the street below with its crowds moving in both directions, but again the height was too great for us to discern any objects distinctly.

"We must be at least a thousand feet up," I remarked.

"Quite an apartment we have!" remarked Pearson, as we turned our attentions to our new home. "And good old water too." This from the bathroom. "It is pretty flat though, probably because we are accustomed to the chlorinated variety."

Nevertheless it was good water, and we partook of it, not so much because of thirst, as from curiosity.

There was a knock at the door and a note was dropped through the slot.

"From Calloway," said Kroelich as he scanned it. "He wants to know how things are progressing. We'll send him an answer so he won't have cause for alarm or worry. I hope his vigil does not become too monotonous."

A message of reassurance was written, disinfected and returned via the slot to the waiting messenger outside the door.

We were all smoking, speaking of what might be in store for us during our visit, when there was a knock and another message, or rather what turned out to be a sketch of a man in a suit similar to ours.

"I guess one or all of us are wanted," said Pearson as he began pulling on his suit. "I'll find out. Spray me, Bell."

I did, and he left the room, returning

immediately with a large tray of food under a tight fitting cover.

"I like our visit more and more right along!" he said, removing his helmet. "They have human requirements after all, or otherwise recognize the fact that we have."

THE meal was much the same as one on earth, meat, vegetables and the milk of some mammal. Of course, the tastes were different, but not at all unpleasant. The milk was quite aromatic.

"Probably due to some common plant with an aromatic flavor which is eaten by the cattle here," answered the professor.

A short while after we had satisfied our appetites, there was another knock on our door and a sheet of parchment with four figures in suits dropped to the floor.

"We all go this time!" I said.

The strangeness of this unknown world made us eager for every new venture. We left the apartment after spraying each other's suits and followed the guide to the elevator in which we had descended from the transmitter room. This time we rose some twenty stories and stepped out into the corridor. Since all of them which we had seen were almost identical, we could not tell one from another, or whether or not it was the first we had been in. We passed several doors before the man opened one and pointed for us to enter.

This room looked much like an operating room and laboratory for surgical and medical research. I was surprised that even glassware, test tubes, beakers and the rest, was much like what I had seen. Obviously there was little difference in the final mechanical and physical forms which evolved through various stages for definite purposes. Mechanical forms such as the lever and the wheel would appear with the dawn of any civilization.

Half a dozen men and four women, the latter the first we had seen, were awaiting us. In the center of the room was a glass compartment with two openings in one wall. I was the first one directed to enter. As soon as the second compartment door closed, one of the women motioned for me to remove my suit and then pointed at the inside of her left arm at the joint. Curious, I sat on the stool provided and rolled my shirt sleeve above my elbow. The girl then put on arm-length flexible gloves of a material similar to rubber, and, taking a large empty hypodermic syringe in her right hand, inserted both hands through the holes in the wall. I saw then that they too were rubber covered, each having an opening which would close when the arms were withdrawn, preventing an opening to the air of the room.

I shrank back when I saw the syringe. I was not going to be a martyr to their experiments or a sacrifice to furnish material for a few notebook pages on advanced surgical experiments! The professor was nodding to me, telling me not to be frightened. It was all very well for him to maintain his composure, but he was not at that moment in my shoes! The girl, pleasant looking, smiled reassuringly, so finally I sat down once more to find out what dire purpose she had in mind. It did not take her long to show me she merely wanted a blood specimen. After that I co-operated to the best of my ability, grasping my left arm tightly above the elbow with my right hand, at the same time flexing the fingers of my left hand.

IN a moment, like an expert which she undoubtedly was, she had applied a swab and made the introduction into the vein. The withdrawal was perhaps three ounces. A second swab followed the extraction of the needle, after which I put on my suit, none the worse for my exper-

ience, sprayed my suit carefully, and left the chamber.

In turn, the professor, Kroelich and Pearson gave up a like amount of their blood. We were allowed to watch the laboratory work for some time, before being escorted back to our apartment. Four of the creatures had entered and worked with the attendants. We were of course interested in the purpose of the collection of the blood specimens. Personally, I thought the beings of this world were curious and wished to examine the blood for the purpose of determining the similarity in corpuscles with those of their own blood. I fully expected that X-ray examinations of our skeletons and internal organs would be made next. I was partly wrong in that surmise.

Small specimens of our blood were taken by four of the male attendants and put on slides presumably for microscopic examinations. In part, this was true, but the microscopes through great magnification and very brilliant illumination projected the images on screens mounted horizontally behind the instruments.

The leucocytes and red corpuscles were apparent as well as various other cell forms, bacteria, no doubt, but I was hardly familiar with this study and could not identify them. Movements were perceptible in some, but the heat from the brilliant source of lighting was causing rapid death.

Each operator was sketching all different cell forms before him and writing comments after each. The work required very few minutes in the hands of these experts. A comparison was made by all four men. Evidently one of them had found evidence of something different or unusual. Immediately I wondered if I were sick with something, but the attendant, who had made the discovery, motioned to Dean Harvey to follow him. Our guide then touched our shoulders and beckoned the three of us to follow him. We were reluctant to leave the professor behind, but we could conceive of no harm coming to him, after our experience with the doctors of this strange world.

When we had removed our suits in our rooms, Pearson and I voiced our curiosity. Kroelich was silent for a moment and then spoke words which sickened us at heart.

"I guess you boys did not know that Dean Harvey is dying of internal cancer. That is one of the reasons he was not afraid to make the first trip. He has not many weeks to live, but he certainly is putting up a mighty brave fight. Don't say anything about it to him. I believe that these men have discovered his serious state through some evidence in his blood specimen. They would naturally show interest in something different from forms in our blood specimens."

PROFESSOR HARVEY returned during our further discussion of his plight, whereupon we forced smiles and all helped him remove his suit. In spite of his apparent cheerfulness, we could see a hidden hint of terror in his eyes.

"Well, I feel far more honored than you fellows," were his first words. "They chose me as the first earth man to be examined with fluoroscope and X-ray!"

He averted his eyes for a moment or two and then, with his usual composure, changed the subject. Never a word from those lips complaining of the mental and physical torture he had endured for months, without the slightest ray of hope. Discovery had been too late for surgical removal. Every day brought the inevitable end much nearer.

It was some time before we were able to think of other things about us. Every day, and sometimes twice a day, we exchanged messages with Calloway. Probably I shall not mention this fact again

for it became one of our regular routines.

That evening upon our response to a knock, four figures in suits entered. They had books and writing materials under their arms. At first glance their helmets seemed different from those we wore. Closer scrutiny revealed they were equipped with transmitters and receivers for communication with us and that the wearers were femiffine. We were to have our first lessons!

"Seems they hope our visit will be a lengthy one," Pearson observed, "but I see no need to hurry our departure since we can go at any time, and this is some experience. I'll bet we will be shown everything!"

There is no need to go into much detail concerning the instructions. As we had expected, the language was simple after centuries of change and perfecting. Also, it was common to the men and the superior beings. After only a week we had practically mastered the spoken as well as the written tongue. The voices of the girls were little different from those we had heard on earth. The language itself was hardly beautiful in sound, but it was practical. I wondered if the hardness was typical of the race, if art was unknown and if everything was sacrificed for practical things.

Our instructors were both patient and pleasant. They had duties to perform and were performing them, probably feeling some pride in being the first to make really intelligent contact with the visitors from another planet.

As soon as we had the barest working knowledge of the new tongue, we poured continual streams of questions into our teachers' ears. There were no secrets, and all of the answers were simple and direct. Either everyone knew all there was to know or these four were particularly cognizant of their world and its happenings. Judging from what standards we could supply, their globe was only slightly smaller in diameter than ours, but its surface was nine-tenths water with only two continents, Sar, upon which we were, and Poru, a nearby island of very nearly the same size. There were smaller islands, belonging to each continent, of relatively little importance.

THE days were approximately twenty-two hours of our time in length and the temperature ranges were very similar to those on the earth, even at the poles which were solid ice-caps. The Fyns, or creatures we had first seen, were truly a puzzle to us. They bothered little about the humans, being more tolerant than loving. They acted as protectors, but did not demand tribute or even labor. They supplied much of the machine design for they were very skilled mentally. The brain was not any larger than that of a man, but the Fyns concentrated only in a few fields. Surgery and medicine were far advanced as were mechanical devices. Atomic power had been released, but was not yet extensively used except in aircraft and vehicles. There was little heavy work to be done outside of mining and building, and the older atomic hydrogen engines were relatively efficient. Even electrical energy was still used as a source of much power. The change to atomic power was being made gradually.

Men were taught by the Fyns and given everything in the way of knowledge. No civil wars had ever been recorded. It was understood that men were expected to aid in a national emergency. So, although they mixed little socially and lived apart, life, in general, ran very smoothly. It seemed the Fyns even looked with pride upon their kind and unselfish treatment of the other race though they were never arrogant. There was perhaps a feeling of superiority—rightfully, for they knew that man depended on them for better methods and other vital matters. Men were their children!

On the island of Poru lived the green beings like the Fyns except in color, called Rus, and, with them, in the same manner as on Sar, men similar to those of Sar. The same relations existed also, but the population had become far too great for convenience. Sar, hundreds of years before, had been visited by a plague, traced to bacteria from the nearest planet in their solar system, which had wiped out three-quarters of the population in four days, before it had been checked with serums. Poru had lost only relatively few, for their physicians had found an antitoxin, luckily enough, at the end of the very first day.

BECAUSE the Rus had been too busy saving their own nation, they had not given much thought to their neighbors on Sar. A feeling of bitterness developed quite naturally, the Rus claiming medical superiority, while the Fyns hated all the peoples of Poru, because they had not aided them. Though the centuries had passed, it was not difficult for the two nations to find little hates to add to the original store, for one does not need to go far to find trouble. A state of armed truce had existed for fifty years. Neither side cared to strike the offensive blow, since both had the same engines of destruction and protective devices against them. New inventions and ideas did spring up, but both nations had such clever spy systems that nothing important ever happened on either island, which remained a secret longer than a day or two!

It was obvious that such a truce could not last forever, and, sooner or later, the break would occur, probably instigated by the people of Poru, who must find space for their extra millions. By very special precautions, the Fyns had kept secret the method of our coming, but our presence was at once known, and also that we were visitors from another solar system. The Rus demanded they be allowed to extend the visitors a welcome in Poru, which was only fitting and proper they said. But prompt refusal was the answer of the Sarians. Immediately diplomatic relations were strained to the snapping point. The four of us had been summoned to aid in the destruction of Poru, was the gist of a message!

Our quarters were immediately changed to the lower floors of the building, some four hundred feet under the surface, and thousands of armed men stationed on every floor above us to prevent our kidnaping, but after a few days the matter blew over as such matters do. Another cancer was added on both sides.

In spite of the depth, we detected no difference in the comfort of our new suite, even dampness being lacking. Of course all of our illumination was now artificial. What we had taken for incandescent bulbs were really radiators of light flux fed by quartz rod transmission lines from central light-stations. We were to see all of these things in a few days, we were told by our instructors, who still spent hours with us, for the most part devoted to answering our questions. The dean had been repeatedly called away to the surgical room.

"For some tests," he explained.

After a week he had lost the haunted look in his eyes, and he seemed less like the dying man that we thought he must be.

"These fellows certainly are medical geniuses," he said. "I'll have something marvelous to tell you boys before long, if the tests are successful!"

His smile was more in evidence day after day. A few days later the four of us were taken to the medical laboratory, and all but the dean were given a tiny injection and told to lie upon the floor immediately. The dean told us that he had had his the day before. Suddenly we felt a terrific nausea followed by pains

which caused a sudden lapse of consciousness, perhaps only for several seconds. Still feeling weak, we were motioned to arise and remove our suits!

The whole nation of Sarians had been inoculated for all of the diseases we had carried, and we had been likewise inoculated for theirs which were very few. The injections we had just had were also for something the dean had carried in his bloodstream, not found in the three of us.

"But it is not contagious," said the professor to the attendant, "and it is not a germ disease!"

"You will agree that you are recovered, will you not?" asked the doctor.

"Yes, but your injections have been direct and merely destroyed what you term the irritant which causes abnormal cell growth such as cancer."

"True enough," returned the Sarian, "but if this irritant were duplicated in the laboratory and strengthened a thousand fold, it would promote cancerous growth on contact and at a prodigious rate. See!"

WE were led to another room where large glass jars stood in long rows on tables.

"In cultures, all of your bacteria were bred separately and serums made for their destruction. Here we have cancerous growth which we also developed by adding flesh and our irritant which acts like a catalyst."

He opened the jar which had an ugly green and red blotched malignant growth in it and an overpowering odor of putrefaction.

"Had you not been inoculated a short while ago, you would now be dead men," commented the doctor.

He went to another jar, procured a piece of meat weighing probably five pounds and dropped it into the cancer culture jar. Before the meat reached the bottom of the jar it underwent a change in form, festering out into horrible sores and welts. In thirty seconds it was a rotting mass!

"Is that sufficient proof, gentleman?"

"It is!" we agreed after the vivid demonstration.

"Referring to the ordinary cancer," said Kroelich, "have you a definite cure? The professor is now in perfect health?"

"He is. Years ago we had much the same abnormal cell growth, which became the greatest cause of death. It was not an animal or plant organism. We finally isolated the irritant and it did not take long to find a combatant. You understand, of course, a vast difference exists between his cancer and what you have just witnessed!"

Next day I asked my instructor the purpose of the awful thing we had seen.

"It is a secret even from us," she whispered, "but my brother is one of the doctors you saw, and he told me. You must swear to tell no one. That new form of cancer will be used, with the other bacteria you carried, as a terrible weapon against the hated island of Poru. We have all been inoculated against them here. Disease is quite rare because of the high development of antitoxins and serums, but your forms, being new here, have never been anticipated. Before the Poruvians can manufacture defensive antitoxins for the thirty diseases we have grown in cultures, they will be extinct. It is sickening and revolting to me, even though I am a Sarian and know the Poruvians would do as much to us did they hold such a weapon. I hate it all, but we realize that a blow must be struck, before we are taken by surprise by some destructive offensive from Poru. Rumor has it that there is such a weapon, but even the spies cannot ferret out details!"

So the women of this world did have the finer qualities possessed by their sisters on the earth.

"Were the others to know of my sen-

timentalities, I should be an outcast," she said, "so you won't tell them?"

She had put her hand over one of mine and squeezed it gently in her appeal.

"Never!" I said.

For a moment she looked at me with kind eyes and then, "We are to show you the city today."

At last our chance had come to view the mighty things the Fyns had reared through the centuries.

"FIRST you are to appear before a council of Fyns who wish to learn some first-hand information about your world."

We followed my instructor to another elevator and ascended many floors. When we stepped into the corridor we found it wider than those we had seen, with relatively few doors leading from it. Our guide rapped on one, and when it opened, we found ourselves at the end of a large hall. At the opposite side was a group of Fyns, undoubtedly the council.

We approached them feeling a bit nervous, perhaps mostly because of the occasion when intelligent beings of two widely separated worlds were to converse in the same language for the first time. We were curious too, to find out just where this new world was located with reference to our own.

"Greetings, men from earth!" said the spokesman. His voice was resonant, but the words were rather unpleasantly harsh. "We know that you, as well as we, are curious about the details of this visit you have made us, at considerable risk to yourselves."

There were fifteen Fyns in the council group with four recording clerks.

"Please be seated," and the spokesman waved a tenacle toward four chairs before a small table.

We were asked about our status on the earth, of other intelligent animals or plants, if there were any, of our means of transportation, our weapons and our social structure. After an hour the spokesman told us we were at liberty to ask questions of them. He was courteous in the extreme, and sincere, I am certain. The dean asked for an explanation of the transmission and also just where we were.

IN reply the Fyn said, "As for where your world is located with reference to ours, we cannot tell. Star maps are being brought here so that you may be able to identify at least some of your constellations. As for your visit, we accidentally captured your radio frequency radiation during our first experiments. Our beam was locked to yours so that your beam could not escape us. By means of separators, we were able to capture the thought auras of three of you, the fourth, stronger than yours, some days later. These followed you continuously. We could sense good intelligence at the ends of the beams, and we awaited for indications of the most receptive conditions, usually during sleep, for transfers of thought waves.

"Thought, a complex wave itself, can be made to modulate a radio frequency carrier of relatively high frequency, just as of audio frequencies. Instead of true demodulation, the brain follows both sides of the envelope without changing the carrier in the least. Four of us transferred thought to your men. We found it possible also, by high frequency mixtures in proper proportions, to break down molecular structures until the molecular bonds were completely balanced, and to transmit them as waves to be again set up at a suitable receiver, as they were before transmission.

"We concluded that beings employing ultra-high radio frequencies would be of sufficient intelligence to grasp the true meanings of the thoughts we transmitted to them with the results that you con-

structed the required apparatus for two-way communication. Our neighbors, the Rus, are working along similar lines, but our secret is so closely guarded that their spies cannot learn it, but they do know the ultimate results. We have advanced beyond you in the use of higher radiations which have supplanted all projectile weapons which, you say, you still use. Wars will cease on your world when rays come into common use because of their terrible destructive powers.

"Atomic power is supplanting atomic hydrogen engines slowly, as your instructors no doubt told you. We are happy to know that you have progressed far enough to have made some little use of atomic gases. The field of application is wide indeed, second only to the ultimate utilization of the atom's energy. As for the cosmic radiation of which you speak, its secret is still locked from us, though we know its results from the building up of matter. The entire universe is growing rather than dying."

At this point the star maps were brought in, but there were no similarities to any of the constellations as we knew them. We must have been many light years from our galaxy!

"Your measurement," continued the Fyn, "of forty units of distance in forty units of time is not clear to us."

Kroelich and the professor showed the approximate distance along the floor and showed the interval of time on the latter's watch.

"SEEMINGLY preposterous to you, gentlemen," said the Fyn after carefully considering the facts, "yet, time does not exist in reality. All methods of measuring a given interval are relative just as space itself. Space is curved and warped just as time may be. Yet, it is nothing in the universe or to it. You pick an interval and yet time was before and is after; it cannot be captured or changed in any manner! The transmission might even have twisted you into another dimensional plane, however, unlikely."

Then came more questions from us and more from the Fyns.

After several hours the spokesman said, "You men will be accorded all privileges, for you are, after all, dependent on us for a safe return. We hope you will delay this for many days, while you look over our city and visit our land. You need feel no fear of kidnaping now, because we are keeping extra lookouts. Weapons and ships will be placed at your disposal, the former if you should choose to go into our beautiful forests. Your freedom is unlimited, and we hope you will pass the time happily. We are delighted that we have been able to save the life of one of you!"

Details must be omitted because of space, but we viewed the giant central power station where atomic hydrogen engines hissed shrilly, as they pumped the water, generated the light-flux, and converted their mechanical energy into electric energy for the entire nation's uses. Though horsepower to horsepower they were one hundredth the size of our power convertors, they towered fifty feet above us and covered acres of floor space. The energy released was inconceivable to us.

We saw the park and the imposing skyline formed by towering, yet graceful buildings against a carmine background.

"Those trees are blue, or I'm color-blind!" exclaimed Pearson.

Indeed, the foliage was, as well as the sward which covered the grounds.

"A YELLOW sun," said the dean. "Our own sun is red, hence green foliage. The apparent light is white, but in true color it is red. Complementary colors, always. A blue sun would undoubtedly lead to yellow chlorophyl on its planets."

What a picture against the red sky! At one edge of the city was a sheer wall of brilliant blue rock. Miles beyond were the mines and farther, some lesser settlements. The vehicle we used was driven by an atomic hydrogen engine no larger than a watch. The body therefore varied considerably in shape and size from the earthly automobile. Many men and Fyns were on foot. I never could watch the latter roll along on their disc-like bodies and suction cups, using their tentacles as guides, without a creepy sensation within me.

"I'm for visiting the forests for real thrills. I've always wanted to be a big game hunter, and this looks like the chance," I said that evening after an extremely interesting day.

The others were all for it, so we made known our plans to the man who brought our evening meal to us.

"It shall be arranged, gentlemen," he said.

"Mighty obliging lot," observed Pearson after he had left the room.

After breakfast the next morning, the attendant brought four belts with him holding weapons new to us. He explained they were ray guns and showed us how to use them, cautioning us against carelessness because of their great range and power. We were asked to follow him to the roof where our ships awaited us. They were tiny bullet-shaped one-man ships with rocket tubes, I thought, mounted at different angles over the outside shell.

"Instructions first!" said the man and led us to a larger ship which we entered. Two men were at the controls, one operating them and the other explaining them.

As we sailed over the city and maneuvered, the functions of the controls were outlined to us. They were so simple that in half an hour we returned to our own ships, knowing every detail of operation. The motive power on these ships was furnished by atomic hydrogen jets released through the various tubes. The amounts and the positions of the tubes employed determined the direction and velocity of travel. An elevation indicator, speed indicator and a compass were the sole instruments on the panel.

WE entered our tiny ships which weighed perhaps four hundred pounds, and we rose slowly, feeling more confident as we experimented with the controls. Now and then one of us would dart off unexpectedly, due to our inexperience, but in fifteen minutes we could maneuver quite expertly.

The tops of the cabins could be pushed back from the cockpits so we could converse if the distance between speakers were not too great. The only sound from the ships was a slight hiss from the rocket tubes.

From our elevation we had spread under us a startling view, beautiful in the extreme, probably because of the extraordinary colorations. No doubt, to one of these beings, green foliage and a blue sky would be just as entrancing. The vast forests spread below and beyond the blue cliffs, we had seen, in various shades of blue while lighter patches denoted openings in the forest, often following streams for many miles.

We reduced our speed and lowered our ships to just clear the tops of the tallest trees. Thus we drifted slowly above them. There was a distinct aromatic odor from the forest, most pleasant to our sense of smell. Soon we came to a large rocky clearing, a bright yellow patch in contrast to the field of blue. We lowered our craft gently and stepped to the earth.

The yellow coloration was due to a sort of sandstone, fragments of which covered several acres, forming a low hill. We walked to the edge of the forest and felt a cool inviting breath from the

gloomy depths. We had been told there were no longer any formidable beasts on the island with the exception of two varieties of venomous reptiles, which we might encounter. Both made considerable noise before attacking and could easily be dispatched, before they could come within striking distance.

Odd flowers grew upon the soft leaf mold under the trees, while vines hung from them, their tendrils deeply imbedded in the soft bark, partaking of the sap. We were enchanted and wandered miles from the clearing. Suddenly there was a deep rumble of thunder. We concluded that we had best return if we wished to keep our clothes dry. As we retreated, the thunder became louder and more frequent. Drops of rain fell here and there between the trees.

By the time we reached the clearing, the lightning was illuminating the black sky with such frequent flashes, that there was seldom darkness. The rain had started in earnest! A stiff wind was roaring through the forest all about us, swaying the tops of the trees violently. The dean and Kroelich were first to reach their ships and hurriedly pulled their cabin tops over them.

Pearson and I were not much behind them, and soon all of us were rising, Kroelich and Harvey above. They were suddenly caught in the gale and hurled sideways, helpless. Pearson saw them hurtled away over the tree tops too, and both of us settled down just before we had reached the tree tops. No use to battle that storm, for, if it were like an earthly thunder storm, it would last only a short while. We settled close together and waited. The rain was falling in such torrents that the forest edge could not be seen. The electric display had almost ceased. Soon I could no longer make out Pearson's ship in the terrific downpour.

After perhaps ten minutes the flood began to lessen, and I peered out. The rain was still too heavy to see Pearson, but I did see his ship. I looked a second time. Yes, his cabin was open! What had he done? Regardless of the rain which was still falling, I pushed open my hatch and jumped to the ground. He was not in the ship! Certainly he would not have gone into the forest. I saw too, footprints of men's shoes in the stiff clay, with evidences of a struggle, and there was his ray pistol at one side.

I shouted his name again and again. The rain had ceased, and the sun was shining through the thinning clouds. I looked about the clearing and saw another ship, half turned over against a rock. I grasped my pistol and ran to it. Inside was an inert figure slumped in the seat. The ship must have been hurled to the earth by the wind while the rain was falling heaviest.

I HAD some difficulty in opening the roof since the car had been badly warped by the fall, but I finally forced it open with a rock far enough to grasp the pilot under the shoulders and hoist him out. It was a girl, unconscious or perhaps even dead, to judge from the color of her face. I dipped my handkerchief in a puddle of water formed in a hollowed rock and wiped her face with it. She was not dead, for I could feel her pulse and detect her breathing. Soon she groaned and opened her eyes. She did not speak but bit her lips to keep from crying out, pointing to her right leg. I removed the boot she was wearing, the first I had seen on Sar, and found her leg had been fractured just above the ankle.

While I was thus occupied, I heard shouts from behind and found that Kroelich and the professor had returned safely. I breathed a sigh of relief that no harm had befallen them. They ran toward me, thinking some harm had come to Pearson. When they saw that it was

a girl beside me, they asked the whereabouts of our companion.

"He just disappeared!" I said. "When the rain had stopped sufficiently for me to make out his ship, I saw the cabin top was open. He must have been captured by someone, for there are footprints in the mud about the ship."

They went over to it and began shouting his name. The girl's ship was hopelessly wrecked, so I carefully carried her to mine and made her as comfortable as I could in the small cabin. I was just able to squeeze in myself. The ship rose with a very noticeable effort due to the unusual load. Kroelich and the dean had finally given up the search and were following me, soon passing us on their way to the city to report the kidnaping.

When I landed on the roof of the building, scouts were already on their way to the forest clearing. The girl, whose name was Lele, was carried below to receive the necessary medical attention.

"WHAT has happened to him?" asked Kroelich anxiously. "Certainly no Sarian would do a thing like that! We have just been told that no enemy craft has been sighted either. Yet the prints were those of men."

We waited on the roof top, for the most part silent. I went below to question the girl. After being directed to the surgical room, I found her resting after the splints had been put in place. She said she had seen nothing and heard no more. She frequently flew over the forests, landing often and wandering about in the solitude. Her ship had been seized by the gale and hurled into the clearing during the heaviest downpour of rain.

As she spoke, I noticed that she was pretty in spite of the pain-drawn features.

"Are you, by any chance, quartered in this building, Lele?" I asked.

"Yes," she said. "I was one of the attendants in the laboratory, when your blood specimens were taken some days ago."

"I hope I may see you while you are convalescing?" I ventured.

"I should be very happy!" and she gave me her apartment number. "I must thank you again for your extreme kindness in rescuing me!" and she extended her hand. "I hope you hear of your partner's safety shortly."

I felt strangely elated. Her hand had been so soft and warm, the touch of which sent a tingling sensation running riot along my spine.

I returned to our underground apartment, elated on one hand, depressed on the other. The professor and Kroelich were both awaiting me, the latter pacing the floor. Shortly after I had entered, there was a knock at the door.

A MAN entered and reported, "The council wishes to inform you, gentlemen, that Pearson is being held in Poru, unharmed. He will be returned to-morrow. It is thought the abductors will be caught before they can make good their escape. The message sent was sarcastic in tone, the essence of it being, that since the men from another world were not permitted to taste the hospitality of Poru, it had been forced upon one of them at least.

"Any further news will be given you on receipt." With that the messenger left.

"And the Sarians saw no enemy ships! I must say they are far from observant. It must have been a big one too, carrying half a dozen men. Fine chance they have of capturing them when they return if they did not see them leave!" I said.

"I'm glad he's at least safe!" exclaimed Kroelich with relief.

The professor agreed with a nod. "There is something behind this outside of hospitality! I hope Pearson comes to no harm."

The next morning I paid Lele a visit

as I had promised. She was resting easily and was cheerful. She was a pretty girl, no mistaking that, and she was like all women I had ever known, a coquette, after her man, though I wondered why it should be I.

An answer to a knock on the door revealed Kroelich. "Pearson's back! He's reporting to the Fyn council now."

"I'm so glad," said Lele. "Go to him, Bell!"

I said goodbye and left. Pearson had already returned from the council room and had begun his story.

"WITHOUT a warning, three men in suits opened the top of my ship and dragged me out bodily. I shouted and tried to use my pistol, but it was knocked from my hand, and I was dragged to a ship resting near mine on the side away from Bell's. I was securely bound but otherwise not maltreated. We passed within fifty yards of a Sarian patrol ship, but they didn't see us! One of the pilots grinned and motioned to the effect that the Sarians were fools.

"Fellows, that ship had been rendered invisible! That is the new weapon of Poru.

"After landing I was told to put on a suit, and then I was led from the rooftop to a laboratory, much the same as the one here, put in a glass cage and a blood sample was taken. The Poruvians know of the Sarian scheme and wanted to develop antitoxins. I don't think they know about the cancer and catalyst development, but they were certain they had our secret. After my rough treatment I told them nothing. Their manner was mocking but they did not try any physical abuse.

"I spent the night in a single room. In the morning I was to be taken back to Sar, the land of eternal fools. I had been permitted to remove my suit which certainly does speak for their medical supremacy over Sar, for they must have inoculated the entire population in twelve hours which included developing the defensive serums!

"'You shall see more of us, earthman!' said a Rus as I entered the elevator to the roof.

"The invisible ship crossed the city of Sar and landed right in the park! I was unceremoniously dumped to the lawn, and the ship was gone. In a moment I was discovered by the Sarians, and the scouts arose in swarms to catch the enemy, but what chance had they unless they accidentally rammed it? And here I am!"

At least the council of Fyns had something to think about now, for they did not have the key to unlock the process of invisibility. That was something to worry about without question. Another thought suddenly entered my mind. What if an invisible ship of Poru should bomb the building which housed the Sarian transmitter, our only link to the earth? Surely the spies knew the location of it. I became very uneasy, and the more I thought about it, the more nervous I became.

The Sarian cultures were slower in growth than had been anticipated, but reports had it that enough cancer culture to attack the enemy would be ready by early evening. The incubation was being forced to the utmost. The Sarians could not now wait for an attack of the Poruvian invisible air forces.

Lele was waiting for me on crutches. "I'm so glad you came." She dropped her eyes.

"I am too," I said. "I wanted so much to see you!"

In reply, she blushed prettily, but said nothing.

I found my three companions in our underground suite and hastily approached the subject foremost in my mind.

"Before Hell breaks loose I want to get out of here! We've been here long

enough to cause trouble, and I'm going!" I concluded.

"It's all right, Bell," said the dean. "We shall not want to miss a few glimpses of the battle, a battle we shall never see duplicated. What colossal engines of destruction these beings must have in readiness!"

PERHAPS it would be worth the risk. If the battle came too close, we could depart in a few seconds. We sent a message to Calloway to stand by all night if necessary, for we would return that night. I called Lele over the phonovisor and asked her if we could safely view the conflict. She said we could for, adjoining the transmitter room was a giant screen on which images over a wide field and unlimited distance could be projected. The attack would be launched from Sar within an hour and she told us we might find it interesting to watch the Sarian ships prepare for their deadly missions.

I went to Lele's apartment and assisted her as best I could. We rose to the roof and found the professor, Pearson and Kroelich already there, where thousands of picked troops formed a cordon under a canopy which had been stretched over the entire square mile of roof-top. A thousand bullet-like atomic planes stood in line, their red, sleek stream-lined sides glistening in the artificial lighting under the cover. Small glass bombs of the terrible cancer cells with their catalyst were being attached to the bomb droppers inside the ships. What untold horrors were these ships with their single pilots, some Fyns, some men. At least half of these small craft were radio controlled. faster and more deadly by far than the others. The acceleration of those having living pilots was limited by the human factor as was the maneuverability. Not so with the radio-controlled ships. They could speed up to a tenth the velocity of light in thirty seconds, and could dip and turn with such great speed that no living being could exist in them.

After loading, the ships were lined up at the far edge of the roof preparatory to taking off on their sinister missions. Then, one by one, the long slender ray ships dropped under the canopy and took on their full compliments of waiting men and Fyns, a hundred to a ship. There were four hundred of these, yet all were manned and poised behind the smaller ships in three-quarters of an hour. These were to withstand the brunt of the defense the Rus would put up, and to allow as many as possible of the torpedo ships to break through the protective screen walls which would be erected about the strongholds of Poru. In these ray ships were the men and Fyns who would control the radio-directed ships. These four hundred ships were not the last, for the secondary ships were being manned one by one, ships of various uses with special rays and destructive powers.

"LET us go below to the screen," said Lele as the secondary offensive planes were being manned and pulled into position behind the ray ships. "The attack will be launched by the time we get there."

When we had reached the room and Lele had made the proper adjustments, the ships were already leaving the roof top.

"The night is very clear," she commented, "and we shall not miss any details."

The receiving beam followed the vanguard accurately under Lele's skilled fingers. As the miles flew by, the magnification kept pace, but very little definition was lost.

Half way to the island of Poru something happened. Suddenly and, to us, unexpectedly, the tiny bullet-like torpedo ships, in twos and threes, grew luminous and then incandescent. Brilliant white spots appeared, and the tough metal sides

melted off in great blobs. The ray ships hurtled ahead as the torpedo craft all slowed down. No enemy ships were visible, but those heat rays were not capable of transmission for many thousands of feet. The great emerald and violet and blue rays, beautiful to see, slowly covered the sky above and the ocean below. Suddenly a luminous glow appeared. It was an enemy ship, caught in a ray, although it had been almost invisible when it attacked the torpedo ships. It writhed and twisted in the beam from the ray ship but could not escape the nimble fingers of the Sarian operator. Another ray joined the first and gradually the real outline of the green Poruvian ship became visible, as the invisibility screen broke down under the tremendous energy of the beams.

A third ray, a repulsive ray, Lele said, shot out to the ship. It writhed for a moment and then whirled away. A sudden scream rent the air for miles as a fourth ray from the Sarian ship stabbed the night, a vacuum ray which caught the ship as it was being hurled farther away. It flattened as the last ray pulled the ship irresistibly against the repulsive ray. The rays released the ill-fated attacker which fell to the sea with no life remaining aboard.

But more Sarian torpedo ships were falling. Other invisible enemies were at work, their numbers increasing steadily apparently. The ray ships were being attacked now, though their protective screens were holding.

Then a change in the formation of the Sarians was made. The ray ships formed a cube with the torpedo craft inside. Again the relentless advance continued. I was struck by the lack of strategy and foresight. At any time the invisible enemy might pass on and attack Sar. Lele replied that the lust for battle, so long unsatisfied, made both nations crazed with the desire to wreak havoc each upon the other. The thrill would be lacking if Sar were attacked, unprotected.

Every now and then an enemy ship would be caught in the maze of rays spread out by the larger Sarian ships, but the increasing number of glaring spots on the protective screens of the latter, told of hundreds of invisible ships. It seemed to me that the Poruvians were not using their new weapon to the best advantage. The long peaceful era had certainly brought about a decay of battle tactics.

In the distance a faint green glow appeared.

"The protective screen wall about the island of Poru," explained Lele. "It will have to be broken down before any of our ships can pass through."

Now there were more brilliant splashes of color on the ray ship screens. The rays were bringing into visibility the great ships of Poru awaiting the armada from Sar.

"THE real battle begins here and now!" I said aloud.

The cube formation changed to a cylinder with the open end toward the defensive ray screen of the Poruvians. The forward ships of Sar concentrated their rays upon a single spot, hoping to break down the screen to give an opening for the torpedo ships. Ships of Poru hoped otherwise, for they immediately began a concentrated attack on the foremost craft of the cylindrical formation.

After several ships had gone directly between the Sarians and the screen and been instantly vaporized by the concentration of rays, the remainder stayed well outside of the path. The screen of the Poruvians was becoming very dense about the attacking fleet, being barely visible a hundred yards away. What an opening it was, but the torpedoes were all inside of the formation and could not take advantage of it. The protective wall could

have been broken down with very few beams I was sure. It was holding the Sarians at the point of attack, however.

The Poruvians now adopted the tactics of the attackers, half a dozen ships directing their concentrated rays on a Sarian ship. Screens of the latter flared brilliantly, great flames of energy shooting into the air for hundreds of yards. Now came the special Sarian ray ships rushing to the aid of the larger craft, attacking the Poruvians from the flank. With this new menace, many of the latter turned from attempting the destruction of the cylindrical formation to fight off this new enemy. These special ray ships were small and nimble. With only one special ray as a weapon and small protective screens, they were forced to keep out of the way of the larger ships.

We soon saw that the enemy had such ships in his fleet, with the result that dogfights ensued with the most spectacular displays of rays and coruscations, beautiful to see but terrible in their destructive powers. Millions upon millions of horsepower were being expended in those few cubic miles of space just off the island of Poru. Screams of vacuum rays and crackling of protective screens fighting off attacking rays made a din which, even at our distance, we had never before imagined. Ship after ship dropped, molten masses after the slightest breaks in their screens.

The forces were too evenly matched for progress in either direction. That wall must be penetrated soon or no torpedo ships would reach the island. A change in formation suddenly appeared with a double layer of Sarian ray ships at the attacking end of the cylinder. Half of the torpedo craft were left unprotected by this change in formation, disappearing almost instantaneously as the Poruvians rayed them.

Now the screen was flaming miles high. At any moment it might break down. A deep rumble rose above the already terrific roar, the ray ships trembling from stem to stern. Lele explained that they were making the last attempt, liberating energy at an inconceivable rate. Their supplies would be gone in a very few minutes at this rate, and they would be helpless before the enemy-rays. It was the last straw. The roar grew as the visor screen before us grew misty. The heat must have been terrific, for the ocean was boiling and steaming for miles around from the secondary radiations alone.

With a tremendous blaze of glaring white light, the island screen snapped. Instantly a solid stream of torpedo ships were through, probably eight or nine of them before the screen again closed. One by one, the Sarian ships cut their rays, they flared incandescent and dropped writhing to the boiling ocean below. They had accomplished their missions. Soon none were left, and the special ray ships, bearing the brunt of the attack of the whole Poruvian navy, suddenly ceased fighting and hurtled back for Sar. In pursuit came the invisible fleet, intent on finally reducing Sar. They could not know that in a few hours they would be the only living Poruvians, and when they returned to Poru, victorious, they too would contract a horrible death.

CHILLS ran up and down my spine. How long would our protective screen hold the hordes with no navy to aid us? Vengeance of the Poruvians would be horrible. Life on Sar would end just as life on Poru was ending even now. Lele trembled as she followed the retreat and the advance. A few auxiliary ships of Sar were coming to the useless attack of an invisible enemy. Without even noticing the attackers, the ships of Poru massed before the screen of Sar, all of their noses in one plane, while a hundred biting, hissing rays concentrated

on the screen in one spot. The end was near! Minute after minute the screen resisted that terrific onslaught, and then it split wide open. Ship after ship poured through the break which did not mend, all of this only a few miles from us.

Minor defenses of the city, formidable in themselves, flared upward, illuminating the sky, to meet the Poruvians. We began to hear the rumbling and felt the trembling of falling buildings. Soon the hiss of the rays was audible through the closed windows of the room, and the enemy ships came into actual view. I looked about shouting that we must go. The professor was gone!

There was a terrific roar and crash that threw us from our feet. The lights were out! The central power plant was gone, and our screen was blank! Our building would be attacked very shortly. I grabbed for Lele's hand and shouted to my companions, "To the Transmitter!"

I felt weak and dizzy from the suffocating acrid fumes of ozone and decomposed metals and rock. Was the transmitter supplied from the central power plant? Was death only a matter of minutes?

Lele led us unerringly through the door to the next room, and, by the brilliant lighting from the rapidly nearing battle, we could clearly see the controls. Dean Harvey was already there, throwing them in. The filaments were lighted, thank God! The building was shaking violently as we waited for the switches to be closed. There was no time to be lost.

"Hurry, professor!" I shouted.

There was no argument as to who would be first to return to the earth since time was precious and could not be wasted in argument if we all expected to return. The dean disappeared and Pearson jumped to the pedestal.

"Lele!" I called.

She looked at me with tears in her eyes. "Hurry," she said. "Goodbye!"

"Goodbye!" I exclaimed in horror. "You are next!"

"Who will operate the controls? The last cannot be saved!"

Kroelich, sensing my idea, grasped her by the wrist as I did, and together we carried her to the pedestal."

"For my sake don't, Bell, don't!" she screamed hysterically.

Kroelich waited. I would lose my hands and arms if I had to hold her. She would not stop struggling. Time was precious. I clenched my fist, closed my eyes and struck her on the chin.

The building was rocking violently now as the enemy ships were silencing ray after ray of the Sarians. As Lele slumped down, I moved back, and she was gone as Kroelich threw the switch.

"NEXT!" I shouted to be heard above the increasing noise of battle. "Your wife and children want you, and I'll be right after you!"

He waited only an instant, grasped my hand and sat on the pedestal. I closed the switch, and he was gone, leaving me alone on this strange world, in dire peril of instant annihilation.

There was a great crashing above, and great cracks were widening in the walls of the room. They had reached the building! The windows broke open, admitting a hot blast and choking fumes. I must take my one chance for life now or never. I left the last switch closed and leaped headlong for the pedestal. As I did so, the ceiling of the room split wide open, and great pieces of concrete fell toward me. Then all was black.

My next sensation was one of terrible agony. I could hear the roars and crashes of the battle, the screaming vacuum rays, the flashes of incandescent screens. Then I saw the body of Lele lying on the floor beside me. Had she come back to me? I must have struck her too hard and killed her! I screamed. Through

the opening in the ceiling three Rus were training their ray pistols on me. Why hadn't they died of cancer? Simultaneously they fired with a blinding flash of white light. I felt myself disintegrate, but it was not painful in the least! I was still conscious. I tried to open my eyes. The pain was coming back. The din was growing fainter. So this was death! Would I drift forever in this state?

Everything was perfectly still now, so quiet that my ears were ringing. A faint sound was disturbing this peaceful quiet, a sobbing sound. With a sudden mighty effort I opened my eyes. They burned frightfully as I did all over. I could see nothing, but I did hear a murmur of voices nearby, and something cold touched my forehead. I closed my eyes once more.

"Bell!" Someone knew me, perhaps another drifting soul!

"Bell!" and that sobbing.

I wondered where I had heard that voice before. I opened my eyes with great effort, and this time I saw something directly above me. I realized I was flat on my back. Slowly my vision was clearing, and I made out the face of Lele.

"Are you dead, too?" I whispered in Sarian.

"No, no!" she answered, "we are all safe."

SAFE? Was I not dead? I moved my head slightly and saw Pearson, Kroelich and the professor all smiling through tears. They moved closer to me. I turned my head to the other side as I felt a prick in my arm. Several doctors were standing there, one of whom was administering a hypodermic injection. I turned to see the others once more. The pain was driving me mad.

"Where am I?" I asked helplessly.

"Back to earth!" said Pearson in English. "You were cracked up a bit, but you'll be all right in short order, Bell."

The hypo was taking effect for I felt numbness in my hands and feet and dimming of consciousness. So all I had experienced had been a delirious dream!

Pearson's "short order" was only a matter of three months. Had it not been for Lele, I should never have walked again. I had made the transmitter all right, and I had been transmitted with a half ton of masonry on top of me just before the Sarian transmitter was wrecked.

When I could again hobble about on crutches with the aid of Lele, I felt more like my old self. For three or four days my companions had not visited me! Of course, I was happy to have Lele with me all of the time, but I did miss the daily visits of my partners. Lele pretended ignorance, but I could tell she was keeping some secret from me.

Somebody was coming down the garden walk. Ah, Pearson, Harvey and Kroelich. It had been weeks since all of them had come together to see me.

Very seriously Pearson unrolled a sheet of paper, and, giving me his fountain pen, said, "Sign on the dotted line!"

"Are you going to collect my insurance?" I asked, just as seriously.

"Sign!" he answered threateningly.

I attempted to unroll the manuscript, but he held it tightly. With an, "Oh, well," I wrote my name at the bottom of the page. Lele clapped her hands like a little girl. The three men bowed.

"Thank you, Mr. President!" they said as one man.

"Say, what's the idea?" I asked, my curiosity fully aroused.

"See for yourself!" exclaimed Kroelich taking the paper from Pearson and unrolling it before me.

FOR a moment I was stupefied. At the top was "BEAM TRANSMISSION, INCORPORATED." It dawned on me finally.

"I won't have it," I objected, but I knew I would, "but the dean is left out in the cold. His name isn't among the officers of the corporation!"

Clearing his throat the dean produced another sheet. On it was "HARVEY CANCER INSTITUTE."

"While you fellows were watching the last of the battle on the visor screen, I was in the laboratory where I gathered up the notes that had been made on my treatment and took some of the serum too. I have transcribed it all, and the world is now to be free of one of its worst enemies!"

A dream come true at last. I sat under the full moon with Lele beside me the evening before our wedding day. Atoms were strange things, and how tiny the electrons circling the proton. I looked up at the stars, each a sun with its planets. What a relative thing size was! What countless millions upon millions upon millions of them. And yet a single electron alone might hold untold wonders.

Had it done so?

THE END.

What Do You Know?

READERS of AMAZING STORIES have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a text-book. Moreover, most of the stories are written in a popular vein, making it possible for anyone to grasp important facts.

The questions which we give below are all answered on the pages as listed at the end of the questions. Please see if you can answer the questions without looking for the answer, and see how well you check up on your general knowledge of science.

1. What is Bode's law? (See page 5.)
2. What does it exemplify? (See page 5.)
3. What planet fails to fit into Bode's law? (See page 5.)
4. Is the name asteroids or planetoids preferable for the little bodies whose orbits lie between Mars and Jupiter? (See page 6.)
5. Give an example of another law of the planets' motions in their orbits, also a law of great simplicity? (See page 6.)
6. What is the distinction between meteroids, meteors and meteorites? (See page 6.)
7. What do meteorites do to confirm the belief that the earth has a core of iron alloy and what operates to confirm it? (See page 8.)
8. How may modern science be taken as affecting crimes? (See page 21.)
9. What are recidivists? (See page 23.)
10. How may a bad man be defined psychologically? (See page 29.)
11. How was insulin, the diabetes serum, given to the world? (See page 34.)
12. What is an assegai? (See page 68.)
13. What is the present condition of Lake Ngami? (See page 73.)
14. What is the description of the aardvark or ant-eater? (See page 77.)
15. What is the velocity of light? (See page 86.)
16. What is the reference to Pythagoras on page 90? (See page 90.)
17. What is the meaning of myopic eyes as indicated by the glasses worn? (See page 115.)
18. What effect might we suppose the drifting of the earth through space to have upon a body detached from it and unaffected by gravitation? (See page 129.)

The Four Dimensional Auto-Parker

By BOB OLSEN

In place of our usual lines of introduction, the amusing poem which follows, we are sure, will be appreciated by our readers as an interesting substitute written by the author.

I read a yarn the other day—
A crazy concept, I must say.
It states that objects have extension
In what is called the "Fourth Dimension."

In hyperspace one could, no doubt,
Make tennis balls turn inside out;
And from a nut remove the kernel
And not disturb the shell external.

A crook could pilfer bonds and stocks,
Then laugh at prison bars and locks;
One step in this direction queer,
And presto! He would disappear!

Let's hope, in planning new inventions,
They'll give us cars with four dimensions.
When searching for a parking place
We sure could use some hyperspace!

—Bob Olsen.

Illustrated by MOREY

"A GENTLEMAN to see you, Mr. Underwood," my secretary announced.

I was busy. I was worried. I was grumpy. The immediate task confronting me was a ticklish one. Desperately in need of cash to take care of pressing obligations, I was trying to dictate a super-collection letter. The trick of the thing was to make my request for payment of a past due account both forceful and diplomatic, so that it would extract a check painlessly and immediately, without offending a valuable client or betraying my own financial weakness.

Hanging up the mouthpiece of my dictaphone, I said wearily, "Please tell our visitor that we are not hiring any copywriters, that we are not buying any space, printing, engraving, artwork, radio time nor advertising novelties. You might also add that we are not able to help any charity, no matter how worthy it may be."

"But this man isn't a solicitor and he isn't looking for a job. He wants to talk to you about handling his advertising."

"Good heavens!" I yelled. "Do you mean to tell me that you are letting a prospective client cool his heels in our reception room? In the name of depression, hurry! Show him in here before he escapes!"

She was about to follow my orders when I amended them. "Wait! On sec-

As we shot across the top of the funnel I could smell the acrid odor of burning oil and feel the hot breath of the smoke which puffed through the cracks in the floor board of the car.

ond thought, I'll go out there and escort him into my office personally!"

I was right behind her as she opened the door. So suddenly did she halt that I nearly bumped into her. Pointing in dismay at the vacant chair in the waiting room, she moaned, "Oh, dear! He *did* get away!"

She was contradicted by a resonant bass voice which boomed out from behind us with a suddenness that made us both jump.

"No! I'm still here!" the voice rumbled

I wasn't exactly afraid, but I could feel my scalp tingle as I turned and confronted the owner of that mysterious voice. He was standing between me and my desk in a spot which I had passed over just a few seconds before.

In a terrified voice, the girl mumbled something that sounded like, "That's the man who wants to see you," and fled, slamming the door behind her.

My visitor's voice had surprised me. His appearance was even more startling. He didn't look like a prospective client for a reputable advertising agency. Of ordinary height, his figure had several incongruities. Supported on long, spindling legs was a veritable barrel of a chest surmounted by a pair of egregiously broad shoulders and an amazingly large head. It was almost totally bald, that head, but its lack of hirsute covering seemed to be compensated for by an enormous moustache, which gave to the man's visage a fierce, military appearance. Conspicuous as this facial appendage was, it was overshadowed by the eyes of my visitor, which were abnormally large and protuberant. This effect was intensified by the large, concave lenses of his horn-rimmed spectacles. Altogether it was a preposterous face—one not easily forgotten.

"I hope I didn't scare you," he snickered.

"Of course not," was my indignant denial. "Naturally I was a bit surprised. I can't understand how you got in here without my seeing you."

"I'll explain that presently. When you told your girl to show me in, I heard you and stepped inside without waiting for any further invitation. But perhaps I ought to introduce myself. My name is Socrates Thoroughgood. And I assume that you are—"

"Remington Underwood, at your service, Mr. Thoroughgood. My secretary informed me that you are looking for an agency to handle your advertising."

"That is correct. I realize that, in order to introduce a new product speedily it is necessary to use publicity. Advertising is a matter for specialists. That's why I came to you."

"Thank you, Mr. Thoroughgood. And may I ask the nature of this new product which you wish to advertise?"

"Before I answer that permit me to ask you a question."

"Certainly. Fire away."

"What is it that this country needs most to-day?"

"Don't tell me that you manufacture five cent cigars," I countered.

"Of course not," he snapped. "Please answer my question: What is it that the country needs most to-day?"

"Well, if you want me to give you an honest expression of opinion I would say this: What the country needs most today is some substitute for money, that can be obtained easily and painlessly. Is that the right answer?"

"Ridiculously not."

"Then please tell me. I'm not very good at riddles.

GLARING at me with his baleful, myopic eyes and accentuating his words by jabbing toward my nose with a hairy index finger, he declared, "What

the country needs today is HYPER-SPACE!"

"Hyperspace?" I gasped.

"Hyperspace," he nodded solemnly.

"Hyperspace?" I repeated. "What in the name of depression is hyperspace?"

He elevated the ends of his moustache, leading me to suspect that he was smiling, although I could not see his mouth.

"Ah!" was his triumphant cry. "Now we are getting somewhere! You admit you are ignorant! You have received the torpedo shock! You are now ready to listen and learn." (My reason, for punctuating his speech entirely with what advertising men call "squealers," is that all his sentences sounded like exclamations.)

"Why, yes," I stammered. "Yes, yes, of course. I am always glad to learn something new. Please tell me about this hyperspace of yours."

"I assume that you have heard of the fourth dimension," he inferred.

"Vaguely," I told him. "I've heard that Einstein uses a fourth dimension in figuring out his theories. Unfortunately, I don't happen to be one of the twelve men who understand Einstein."

"The fourth dimension is really quite simple," he informed me. "Anybody can understand it—even an advertising man like yourself."

"Thank you," I retorted in a tone meant to be sarcastic. "Perhaps you will be good enough to explain it to me."

"I can't take the time to go into the details now. Briefly, the fourth dimension is just an extension of space, like length, width and height. Ordinary human beings have the idea that every object in the world possesses only three dimensions. They call them by various names, such as breadth, thickness and altitude and they assume that these three dimensions represent the absolute limits of space, beyond which it is impossible to go. As a matter of fact, however, every object in the universe, animate and inanimate really has four dimensions."

"Who said so?"

"I said so."

"That, of course, settles the matter for all time," was my sarcastic rejoinder. "I don't suppose that the opinions of great mathematicians, who assert that there is no such thing as a fourth dimension, are worthy of consideration, since they do not agree with yours."

I expected this to nettle him but he only made a silly grimace and said, "It is true that some of the mathematicians, like Manning and Sidlis, who have worked on problems of non-Euclidian geometry, believe that their speculations are purely empirical and have no bearing on the world as it really is. On the other hand, there is at least one eminent authority who believes that the fourth dimension actually exists and who advances convincing evidence to support this belief."

"And I suppose his name is Thoroughgood," I remarked in an ironical tone.

"I'm not the only one. Did you ever hear of C. Howard Hinton, M.A.?"

I shook my head.

"Then I'd advise you to read his book entitled 'The Fourth Dimension.' Hinton devotes a considerable portion of this work to scientific proof that the fourth dimension actually exists. Let me give you an example."

Before I realized what he was going to do, Thoroughgood had ripped two or three sheets from my desk calendar, on which I had jotted down several important engagements. Then he lifted my gold-mounted fountain pen from its onyx base, inserted a dirty finger-nail under the jigger that operates the filling device and squirted a stream of ink from the business end of the pen. Some of the ink spattered all over a drawing which had cost me thirty-five dollars, but Thor-

oughgood didn't so much as say, "Excuse me."

He quickly folded one of the slips of paper, pressing it flat with his thumb. Opening up the paper he pointed to the blot of ink, which had assumed a fantastic shape resembling a cross between an octopus and a butterfly.

"There!" he exclaimed. "There you have an example of bilateral symmetry!"

"What am I supposed to do?" I sneered. "Kiss you or swoon with delight?"

Disregarding my sarcasm, he continued, "Can't you see the significance of this experiment? It proves that symmetry in a two-dimensional object—in other words, symmetry with respect to a line—may logically be explained as being due to a folding process, which can only be performed by moving the object through a higher dimension."

"You seem to be using English words," was my impertinent comment. "The only trouble is that they don't make sense."

"I see I must make allowances for an untutored mind," he came back at me. "Perhaps an analogy will make the point clearer. Imagine yourself to be absolutely flat, as for instance——"

"That won't require any imagination," I interrupted him. "Since the bank holiday was declared I *am* absolutely flat—as flat as a Mexican tortilla, if not more so."

"VERY well, let us suppose you are a two dimensional being. Suppose you saw a number of ink blots like this one—what would your natural inference be?"

"That some moron had been monkeying with a fountain pen," I replied.

He went right on, "Even though you lived in a two dimensional world and were unable to move in a third dimension yourself, it would be possible for you—or rather for a person of intelligence—to figure out that these symmetrical figures were produced by folding the paper through a third dimension, using a line as the axis of rotation. Is that clear?"

"If it will make you feel any better, suppose you assume that it is. And now I'm afraid you will have to excuse me. I have a very important—"

He cut in with, "This is the most important thing that ever came to your attention. I haven't finished. The least you can do is listen."

"All right," I sighed. "But please come to the point."

"Presently. Let me call your attention to an extremely significant fact: Symmetry with respect to a line is common. We find it both in organic and inorganic objects. But there is another type of symmetry. I refer to symmetry with respect to a plane. Did you ever stop to consider that this type of symmetry is found only in organic objects—in other words in objects which are created by life?"

"I can't say that I have given much thought to that consideration," I told him.

"Consider it now. Take your body for instance." He picked up from my desk an Oriental dagger which I had just used to open my mail, consisting principally of bills and duns. Brandishing the keen-edged weapon with a menacing flourish, he shouted, "Imagine this knife to be a huge cleaver. Suppose I bring it down on your cranium and split your body right through the middle."

As he said this he made a savage pass at me with the dagger. The point of it came so close to my nose that I felt a draft as it swished by. Startled and completely caught off guard, I leaped backward, stumbling over a waste paper

basket and crashing to the floor in a most undignified manner.

I'll have to give Thoroughgood credit for one thing: he didn't laugh. Perhaps he smiled a bit, but if he did, his expressions of mirth were successfully camouflaged by the Airdale vegetation on his upper lip.

When I had scrambled to my feet, he went on as if nothing had happened: "Suppose your body was split in two exact halves. They would be remarkably symmetrical—that is, with the exception of that wart over your left eyebrow. But observe this: Your body is symmetrical—not with respect to a line, but with respect to a plane—in this case the plane of cleavage.

"ASSUMING that symmetry may be explained as a result of a folding process, this suggests that your body might have been formed by folding. But to produce this type of symmetry it would be necessary to fold your body on an axis which is not a line but a plane. Folding of this kind is utterly impossible in a three-dimensional world. But it could easily be accomplished if you were able to move in a fourth dimension."

"Do you mean to say that you think human bodies are actually folded in the way you describe?" I exclaimed.

"Of course not. You mustn't take my explanations too literally. What I mean to imply is that symmetry with respect to a plane, such as is found in the human body and other living things, including flowers, fruits, vegetables, and so forth, suggests a four dimensional arrangement of the minute particles from which the growing organism is constructed. Is that clear?

"As clear as pea soup. I still don't get what you are——"

"Very well," he interposed. "Now listen to this: In proving the actual existence of the fourth dimension, Hinton does not rest his case solely on the evidence supplied by the phenomena of symmetry. After all, the strongest argument is that offered by electricity. Did you ever try to define electricity?"

"Oh, yes, indeed," I replied blithely. "Defining electricity is my favorite indoor sport."

"Very well, let's hear you define electricity."

"With pleasure. I would say that electricity is a force which can be transmitted by means of certain substances called conductors, and which may be converted into heat, light, mechanical energy and what have you."

"Not bad for a layman," he grudgingly admitted. "Your definition is about as good as any which has been offered so far; but, after all you really haven't even attempted to explain what electricity really is, or how it is transmitted along a conductor."

"I've always understood that no one knows what electricity is," was my rejoinder. "And also that nobody knows how it travels through a conductor."

"Not *through!*" he said in a manner which suggested a school ma'm correcting a stupid pupil. "One thing we do know about electricity: It doesn't travel *through* a conductor but *along* it or *around* it.

"What's the difference?" I inquired.

"Only this: No scientist of the old school has been able to explain satisfactorily why electricity behaves the way it does. This is because they are all hedged about and restricted in their reasoning by the conventional ideas of space as possessing only three dimensions. Hinton, however, shows that all the phenonema of electricity can very easily be explained by presupposing the existence of motion in a fourth dimension. Electricity is nothing more than a four dimensional vortex motion in the

ether surrounding a conductor. You know what a vortex is do you not?"

"Sure!" I grinned. "It wasn't so long ago that we had to pay a vortex on theater tickets."

Very impolitely he wrinkled his nose as if to inform me he regarded my clever pun as belonging in the same category as a bad smell. Then he went on:

"Perhaps you do not know that when a tornado or 'twister' rushes through the air, or when a whirlpool travels through a body of water, the eddy is made up of the same identical particles of matter. In other words it isn't a case of motion being transmitted from particles in one part of the medium to those in another part, but the same components move along with the vortex as it travels from place to place."

"INTERESTING if true," I remarked. "And so what?"

Ignoring my flippant question, he proceeded: "Another significant fact is that a vortex cannot remain suspended and isolated in a fluid. The ends of the vortex must reach the boundary of the fluid. These boundaries may be external or internal. For instance, one end may be on the surface and the other end on the bottom of a river, or the vortex may extend between two objects in the fluid, terminating with one end on each object, but it is utterly impossible for a vortex to remain half way in a fluid without terminating in two boundaries of the fluid."

"What about a smoke ring," I reminded him. "Isn't that vortex?"

"Yes," he admitted. "It is a vortex with the ends united to form a circle. I'm glad you brought that up, because it illustrates the idea I am undertaking to convey to you. In a smoke ring, the particles are revolving like small rings strung on a large ring. In other words the ring is repeatedly turning inside out. That of course is possible in three dimensions, since the ring is similar to a two dimensional object which is being twisted through a third dimension.

"The vortex motion which Hinton uses to explain electrical phenomena is somewhat analogous to this movement except that instead of moving in rings, the vortexes are in the shape of hollow spheres, which are constantly turning inside-out. To use a familiar analogy, the smoke ring is like a rubber band being twisted, while the vortex motion of the electric current is like a tennis ball which is being repeatedly turned inside out."

Which led me to say, "Baron Munchhausen told some good ones, too."

"What I am telling you are facts, not fairy tales," was his indignant response. "But I can readily see that there is little use for me to cast any more pearls. Let it suffice to say that Hinton's theory, of four dimensional vortex motion in the ether surrounding an electrical conductor, supplies a very logical and convincing explanation of the way electricity behaves. I shall not burden you with a complete exposition of this theory."

"For which I am very grateful to you," I said. "And, by the way, Mr. Thoroughgood, now that you have finished your scholarly dissertation, would you mind answering a question or two?"

"Very well," he condescended. "What do you want to know?"

"As I understand it, you wish to advertise a device which is based on this fourth dimension which you have just explained to me. Is that correct?"

He nodded.

"I see. And I assume that you know it costs money to advertise. Even a small advertising campaign will cost several thousand dollars. Are you in a position

to take care of the financial end of your sales and advertising program?"

"Of course not," he blandly informed me. "That's why I came to you. I was told that you have connections with wealthy people who are looking for worthy enterprises in which to invest their money. I am willing to part with a third interest in my invention for—"

"Excuse me," I cut in. "Whoever told you I could help in the financing of an advertising campaign must have been a historian. It is true that I have done something of the kind in the past—but that was many years ago. I suggest that you read the newspapers. Perhaps you may then become cognizant of the novel fact that conditions are different now. It happens that I am extremely busy today, so I trust you will excuse me."

"YOU talk as if you are trying to get rid of me," he said reproachfully.

"I'm glad you are intelligent enough to take the hint." (I was still rankling a bit over his insinuation concerning the supposed stupidity of advertising men.) "Please pardon my bluntness, but I am afraid it will be impossible to induce anyone to gamble real money on an unproven enterprise."

"Aren't you jumping at conclusions?" he intimated. "At least you can afford to spend a few minutes in witnessing a demonstration of my invention. If you don't you may live to regret it."

Having had previous experiences with inventors, and knowing what persistent pests they are, I sighed resignedly and said, "O. K. Go ahead and demonstrate. But you'll have to make it snappy."

"Thank you, Mr. Underwood. But first, if you don't mind, it will be necessary for me to add a word or two to the explanation of hyperspace I gave you a moment ago. The best way to understand the possibilities of the fourth dimension is to consider what a three dimensional consciousness would mean to a two-dimensional being.

"Imagine what such a creature would look like: Totally flat. Not even as thick as the thinnest tissue paper or gold leaf. Absolutely incapable of moving away from the single plane upon which he lives.

"The home of such a being would be like an architect's floor plan. Mere outlines of rooms drawn in ink on a piece of paper. Yet they would be ample to provide shelter and privacy. To imprison him, all you need to do is to draw a pencil mark all around him. Unless he can find some way to penetrate the thin layer of graphite he will be forced to stay inside the enclosure.

"But suppose one of these Flatlanders —presumably more intelligent than the rest—discovers the existence of a third dimension and constructs a device by means of which he can lift himself for a fraction of a centimeter away from his two dimensional world. If he did this in the presence of another Flatlander he would seem to disappear miraculously. Then he could easily step over the walls of his graphite prison and could enter any building in Flatland without opening the doors or windows.

"Substitute for your two dimensional creature an ordinary man who is able to move his body into the fourth dimension and you will have some idea of the possibilities of my hypershoes."

"Hypershoes?" I echoed. "Is that the name of your invention?"

"It's the name of one of them. I have several inventions but they all make use of the fourth dimension. When I entered your office a few minutes ago I passed directly from the reception room to the center of this office. That's why you didn't see me until I made myself visible to you."

"Do you mean to say that you went through the fourth dimension?" I exclaimed.

"PRECISELY. With the aid of these hypershoes which I am now wearing, I simply moved into hyperspace for a fraction of an inch. Then it was an easy matter for me to step over the wall of this room—or *through* it, if you like—without being seen by you or your secretary."

An alarming thought flashed into my brain. Perhaps the man was crazy. He certainly didn't talk like a rational person. Neither did that wild glare in his eyes betoken complete sanity. I decided it was best to humor him. On the other hand I was anxious to get rid of him as quickly as I could without endangering myself.

"Excuse me, Mr. Thoroughgood," I said, handing him his delapidated straw hat. "Don't you think it's a bit stuffy in here. Perhaps a walk in the open air will do us both good."

Much to my surprise he consented.

"All right," he said. "Maybe that *would* be a good idea. I have another invention outside that has even greater possibilities than my hypershoes. I shall be glad to show it to you. But before we leave this room I wish to make sure you are convinced that my hypershoes really can project a person into the fourth dimension."

"I'll take your word for it," I assured him.

"Don't try to deceive me. I know you are skeptical, but it won't take me a minute to convince you."

Standing on one foot, he lifted the other one and pointed to the bottom of his shoe. I noticed then that the sole was about half an inch thick. Three cylindrical holes were cut part way through the leather, two of them under the ball of the foot and the third in the center of the heel. Inside each of these cavities was a peculiar metal object covered with small lumps like the surface of a raspberry.

"These things are composed of a large number of three-dimensional spheres grouped together in such a way, that they extend for an appreciable distance into the fourth dimension," he elucidated. "In their present position they are all within our three dimensional world. By means of a mechanism inside my shoes which I can operate with my great toe, I can push these knobs out into hyperspace—or rather, I push them against the floor and the reaction causes my body to be projected out into the fourth dimension. Watch me and I'll show you how it works."

THEN, right in front of my eyes, in that brightly illuminated office, a most preposterous thing happened. With amazing rapidity Thoroughgood's body proceeded to shrink. It reminded me of one of those rubber toys, shaped like a grotesque man, that can be blown up like a huge balloon and which, when deflated decreases rapidly in size while still retaining its human shape. Before I had time to blink my visitor had vanished completely!

To say that I was astonished is putting it mildly. My face must have betrayed my amazement, for a rasping guffaw bellowed forth from the thin air a few inches from my ear.

"Pardon me for seeming to laugh," it roared. "I can't help it. You look so funny with your eyes popping out and your mouth wide open."

I shut my mouth and tried to think of some withering rebuke, but before I had time to utter a word, the weird, disembodied voice went on, "To prove to you that I can do what I said I could I am going to return to the waiting room by stepping right through the wall of this office. Kindly observe that the door remains closed, until I open it and enter from the other side."

An instant later I heard a piercing

scream which came from the direction of my secretary's desk in the adjoining room.

Leaping toward the door, I reached for the handle; but before I could grasp it, the knob turned and there in the opening stood Socrates Thoroughgood in his natural shape and size.

"Excuse me for startling you," he said over his shoulder to the girl. "Mr. Underwood was skeptical so I had to use drastic means to convince him." Then he stepped across the threshold and closed the door.

"Well!" he demanded. "Are you satisfied now?"

"Why, yes," I stammered. "That is—well—of course it was done by slight of hand but it was a very clever trick."

"Trick?" he scowled. "You think it was just a trick?"

"Not exactly a trick." I tried to hedge. "But—"

"But fiddlesticks! I did it by passing through the fourth dimension and I'll defy you or any one else to prove otherwise."

In an effort to appease his anger, I said, "Please pardon me, Mr. Thoroughgood. Your demonstration was so unusual that it took me completely by surprise. My eyesight is not very good and I thought perhaps I didn't see correctly. It actually looked as if your body shrank away to nothing."

"Certainly. What you saw was a series of cross-sections."

"Cross-sections?" I gasped.

"Yes. Three dimensional cross-sections of my four dimensional body. You can easily understand that if you think of a two dimensional analogy. Imagine yourself to be a Flatlander swimming on the surface of a quiet pool of water. Close to you floats a three dimensional sphere with half its volume below the surface. Since you can perceive only two dimensions, all you can see of the sphere is a part of a circle—the cross section of the sphere made by the surface of the water.

"NOW, suppose the sphere is pushed down into the water or lifted out of it. What happens? To you it will look as if the circle you saw first had become smaller and smaller until it finally disappeared entirely. Do you comprehend?"

"Yes," I replied. "That is clear enough. As the ball is lifted out of the water the cross sections become smaller and smaller."

"Precisely! And that's exactly what happened to me a moment ago. In reality my body was unchanged. But you could see only that portion of it which happened to be in your own three dimensional world. As I moved into hyperspace it naturally looked to you as if my body was shrinking in size."

"If that's the case, it ought to be possible for you to stop the shrinking process before disappearing entirely," I suggested.

"Certainly," he responded. "Watch me do it!"

I watched.

Once more he began to decrease in size, this time more slowly. When he was about an inch tall the shrinking ceased. The tiny moustache moved, but the words that I heard seemed to come from a point at least five feet above the floor.

"There you are! And if you don't think this is just a cross-section, try to lift me!"

I bent over, gingerly took hold of the diminutive shoulders and attempted to lift the tiny man. He seemed to be fastened to the floor. Even when I grasped him with both my hands and pulled with all my might I could not budge him.

While I was doing this, he began to

swell out once more until he had resumed his normal size.

"There!" he grinned. "I guess that ought to convince you."

"It does," I agreed. "I'm thoroughly convinced that you can make your body look smaller and can pass from one room to another without opening the door between them. Nevertheless I fail to see any commercial value in your invention."

Much to my surprise he took this criticism quite good naturedly.

"I MUST admit that my hypershoes are somewhat limited in application," he concurred. "But I find them rather useful, nevertheless. For instance: Suppose I am walking down the street and I see a creditor approaching me. All I have to do is wriggle my big toes and presto! I vanish! The man I wish to avoid thinks he is seeing things and I am spared an unpleasant interview. In the same way I can get rid of process servers, technocrats, bridge players, fathers of new babies, and other disagreeable bores."

"But," I protested. "Most of us are not so troubled by creditors and process servers that we need to use such drastic means of escaping them. There is only one class of people who would be willing to buy your hypershoes. To them they would be extremely valuable, it is true, but I shouldn't think a reputable man like yourself would want to traffic with that type of person."

"What type of person do you mean?"

"Criminals. Don't you realize what dangerous weapons your hypersoes would be if they fell into the hands of unscrupulous crooks? They would be able to rob homes, stores and banks, and to commit any other crimes with impunity. Even if they were apprehended they could easily escape from any prison in which they were incarcerated."

"That's right," he admitted. "Funny I never thought of that angle. Of course it wouldn't do to let any criminals get hold of my hypershoes."

"You couldn't very well prevent that if you advertised and sold them publicly," I pointed out to him.

"All right," he agreed. "Suppose we forget the commercial possibilities of my hypershoes. I have other inventions which are even more significant. One of them in particular has wonderful possibilities for profitable manufacture and sale. I have it outside. Let us go down and take a look at it."

While we were descending in the elevator he gave me this preliminary explanation: "The most serious problem in our large cities today is the automomobile parking situation. Consider a business man like yourself, for instance. Each day you drive your car from your home in Hollywood or the Wilshire District to downtown Los Angeles. When you get there your automoble becomes a serious hindrance instead of a help. There isn't a parking lot within three blocks of your office. The nearest one you can find charges you about fifty cents per day for taking care of your car. If you wish to call on another business man, say ten blocks away, you first walk three blocks to your car, then drive it five or six blocks and park it, walking a few more blocks to your destination. Every time you do this it costs you anywhere from twenty cents up to fifty cents for parking privileges. I'll venture to predict that you spend at least fifteen dollars per month for parking charges only."

"Twenty-five dollars per month would come closer to it," I told him.

"THERE you are!" was his triumphant response. "You spend twenty-five dollars per month for parking your car—to say nothing of the an-

noyance and the time lost in walking back and forth between parking lots and office buildings. Wouldn't you be glad to buy an attachment for your car which will enable you to park anywhere—right outside your office or any other building—anywhere, at any time, as long as you wish, and without paying a penny for parking privileges?"

"Why, yes," I started to say. "I'd be——"

"Of course you would!" he cut in. "Especially when you could buy such a device, completely installed, for only twenty-three dollars! You could pay for it out of what you now squander needlessly for parking fees in one month. After that your savings would all be velvet."

"Sounds too good to be true," I enthused. "How do you expect to accomplish a miracle like that?"

By this time we had reached the street floor. My office was in the Van Nuys Building at the corner of Seventh and Spring Streets. With Thoroughgood leading the way we walked east on Seventh Street and then turned into Spring Street.

"I came down Spring Street, so it was more convenient to park on this side of the building," he explained. As usual the spaces adjoining the curb, with the exception of the no-parking sections, were full of cars, packed close together with their bumpers touching fore and aft.

"Do you see those four disks out there?" he said, pointing toward the space between the street car tracks and the parked automobiles. Following his directions, I was barely able to distinguish four objects that looked like small, flat ashtrays turned upside down. They marked the corners of a rectangle, about five feet wide and eight feet long.

When I told him I saw the disks he declared, "That's where my car is parked." To prove this amazing assertion he bent over and did something to the disk which was nearest to us.

"Better wait for the next traffic signal!" I cautioned him, but I was too late.

Just as the bell jingled and the "go" semaphore swung up to a horizontal position, a tiny, toy automobile materialized before my astonished eyes. It swelled out rapidly. In a fraction of a second it became a full sized car.

And what a car!

It was a Buick roadster of the pre-war vintage. The crumpled fenders flapped disconsolately. The tires were threadbare. The "two-man top" was festooned with tattered fabric.

Like excited race-horses, the double line of impatient vehicles leapt forward and charged down upon Thoroughgood's delapidated flivver. The leader happened to be a big truck heaped high with gravel. It was almost across Seventh Street, when the driver saw the ancient Buick loom up in front of him. His brakes shrieked in agony as he did his best to stop. Luckily he had not gathered much momentum and he was able to bring his truck to a skidding stop a split second after he crashed into the rear of the roadster. Then, the tension released, he gave vent to a torrent of abuse and profanity that would have made a mule driver blush with shame.

Thoroughgood paid no attention to him. Calmly and deliberately he stepped to the side of his car, snapped on the ignition switch and then walked to the front and proceeded to spin the crank.

After four or five unsuccessful tries, there was a roar from the exhaust and the car began to tremble like a man with the ague.

"All right, Mr. Underwood! Hop in!" he commanded.

In order to escape from the gaping crowd which had gathered around us, I

thought it best to obey. With a noise like a dog worrying a bone, the flivver got under way.

Thoroughgood turned west on Eighth Street, then headed north on Broadway.

"I NEARLY always park in loading zones or in front of fire plugs," he explained as we clattered over the first intersection. Usually there is plenty of parking space of that sort available, but sometimes even the loading zones are full. Then I park directly in the right of way. It isn't quite as satisfactory on account of the traffic and the dumb drivers, but it will do in an emergency. Now I'll show you how my four-dimensional parker works."

We were about halfway between Fifth and Sixth Streets. When we reached the mid-block pedestrian crossing, which was marked by metal hexagons sunk into the paving, he swung in close to the sidewalk and stopped at the place where the curb was colored a brilliant red. Conspicuously lettered in white paint was the warning, "No Parking At Any Time."

I was about to step out when a police officer came running toward us.

"Hey, you!" he yelled. "Move on! You can't park there."

Heedlessly, Thoroughgood switched off the ignition and set the hand brake. By that time the traffic officer had planted one huge foot on the running board of the car.

"Didn't you hear me?" he panted. "Move on before I give you a ticket."

"Better move on," I advised, giving Thoroughgood an emphatic nudge with my elbow.

But he paid no attention—either to me or to the officer. All he did was to give a few twists to a T-shaped handle which protruded from the left side of the steering column.

What happened then was as ludicrous as it was astonishing. Looking down, I saw the running board melt away beneath the heavily shod foot of the officer. The removal of this prop caught him off balance and he plunged forward, sprawling on his hands and knees in the road. He staggered to his feet, picked up his cap, scratched his head and looked about him with a bewildered expression on his tanned countenance.

"Well I'll be a dirty name!" I heard him mutter. "Guess I must be seeing things!"

His face was so near to me that I could easily have reached out and tweaked his nose (had I been in a nose-tweaking mood). Though I could see him and hear him very distinctly, he seemed totally oblivious of our presence so close to him.

Thoroughgood leaned over and whispered in my ear, "We are now in hyperspace. That's why the officer can't see us. All we need to do is wait until he goes away. Then we can get out."

For several minutes the policeman remained in our immediate vicinity, gazing up at the sky and peeping underneath the two automobiles which were parked near-by. Finally he abandoned the search and returned to his post at the intersection.

Thoroughgood gave the handle a reverse twist and the car returned to its original position.

"Let's get out now," he directed. "Come around on this side and I'll show you how the parking device works."

Standing outside the car, he was easily able to reach the handle which stuck out at right angles from the steering column.

"If you will look underneath the car you'll see four rods hanging down from axles, just inside the wheels. Can you see them?"

"I can see two on this side," I told him.

"ALL right. Those rods are part of a small but very powerful pneumatic jack which is operated by the compressed air in this tank on the running broad. Watch what happens to them when I turn it on."

Watching I saw the rods move downward until their disk-shaped feet were in contact with the pavement. Then the rods melted away and the car began to shrink in size. In a few seconds it had disappeared completely.

"There you are!" he exclaimed. "Neat, isn't it?"

"Very neat," I concurred. "Will it work with a large, heavy car?"

"Certainly. It will work with any vehicle—even with a ten-ton truck. Naturally the supporting rods will have to be built stronger for a heavier car and it may be necessary to use a larger air tank, but otherwise the same mechanism will do for any size car. You must bear in mind that it is only necessary to lift the car a fraction of a centimeter away from the three dimensional boundaries."

"I see. Would you mind explaining how you get the car back out of the fourth dimension?"

"That's the simplest part of the whole performance. You will notice that in the center of each of these disks there is a small milled protuberance about the size of a quarter. Any one of them can be used for lowering the car. All I have to do is to turn one of these tiny dials. That permits the air to escape and the force of gravitation brings the car back. Would you like to try it?"

Following his instructions, I turned the coin-like wheel on one of the disks. There was a hiss of escaping air and Thoroughgood's car grew before my eyes from a tiny speck to its normal size.

"Do you know how to drive a Buick?" the inventor asked me.

"I used to drive one many years ago," I told him. "The middle notch is the neutral, isn't it?"

"That's right. Suppose you take the wheel this time. Turn on the ignition and I'll crank it for you."

Little realizing what I was getting myself into, I took my place at the wheel, turned the switch and put my foot on the clutch pedal. Thoroughgood cranked and this time the motor started at the first try. With surprising alacrity he clambered into the seat beside me without stopping to open the door.

"Quick!" he yelled. "Get going! Here comes that cop we fooled a while ago!"

I looked back. Sure enough! There was our friend the traffic officer. He was coming toward us at a dead run. Even at a distance I could see that there was blood in his eye.

In my haste to escape I put it in reverse and jammed on the brake at the same time. The motor coughed a growling protest at this outrageous treatment and gave up the ghost. By this time the officer, book in hand, was asking me for my operator's license.

"Twist the four dimensional parker," Thoroughgood said as he pointed to the handle which protruded from the steering column.

He didn't have to tell me twice. With my left hand I twisted the handle and kept on twisting it until it would twist no further.

"That's enough!" the inventor yelled. "Shut it off! Quick!"

But the warning came too late. The car began to shudder and to rock back and forth. At first I thought the motor had started again, but I soon discovered that the motion was quite different from the vibration of the engine. Like a sapling in a heavy wind, the Buick swayed and strained. Then, with the suddenness of a cannon shot, the car

with the two of us in it leaped into the air.

IT is useless to attempt an accurate description of the wild flight which then ensued. Moving sideways in an easterly direction, the flivver seemed to flow along with breath-taking swiftness, following closely the contours of the obstructions that lay in our path.

Climbing up the face of a building, seemingly only a fraction of an inch from the wall, the flying car swept across the roofs, only to plunge with sickening speed to the sidewalk below. Then across the street it sped, hurdling automobiles and pedestrians who seemed to be entirely oblivious of our presence. On the opposite side, we shot up and over the next building and so on until we reached the outskirts of the city.

Soon we were brushing the tops of the grape vines and the orange trees in the vineyards and orchards of San Bernardino County. Then, as if we were on a colossal roller-coaster track, we were tearing up and over mountain ridges, coasting at break-neck speed down precipitous slopes and shooting across picturesque, wooded valleys. Then we were playing leap-frog with the cactus and giant Joshua trees of the Mojave Desert.

As it hurtled along on its preposterous journey, our levitated machine went through the most outrageous maneuvers. It spun and somersaulted and skidded, now moving sideways, now upside down, now on end with its radiator nudging the ground. Strange to relate, these eccentric gyrations didn't seem to bother me in the least. Even when we were traveling with our wheels pointing heavenward, I had no difficulty in keeping my seat. The violent spinning didn't even make me dizzy.

With hundreds of square miles of desert land in which to navigate, it seemed rather strange that our flying car should decide to travel for some distance along the only railroad in that section of the country. Possibly there was some magnetic attraction between the rails and the metal of the automobile or maybe it just happened that the railroad and our own itinerary coincided for a stretch. At any rate, we located the rails and followed them for a considerable distance.

We hadn't been on the right of way for more than a few seconds when a west bound transcontinental train loomed up in the distance. Rapidly as it approached us, our own speed was many times faster. It looked as if a terrific head-on collision was inevitable. I started to clamber over the side of the car, but Thoroughgood grasped my arm and held it with a grip of steel.

Surely, I thought, the engineer would see us and would try to stop the train before we reached it, but he didn't slow up or even blow his whistle. Straight toward us that great locomotive thundered. When it was almost upon us, our car gave a slight upward lift, slid deftly over the cow-catcher and scuttled over the roof of the locomotive cab. As we shot across the top of the funnel I could smell the acrid odor of burning oil and feel the hot breath of the smoke which puffed through the cracks in the floor board of the car.

BEFORE I had time to draw two breaths, we had swept across the roofs of the coaches and had sweeped down upon the empty tracks once more. When we came to a curve in the track, the machine deserted the roadbed and shot in a straight line across the desert to the banks of the Colorado River. Down the west bank we coasted, skipping across the water and zooming up the cliffs on the opposite shore. Then away over

the sage-brush wastes of Arizona we scurried.

During this long journey—which had consumed but a few minutes of time, neither Thoroughgood nor I had spoken a word. I was too busy hanging on to my seat and watching the panorama which unrolled beneath us with amazing swiftness, to bother about conversation. Finally, however, I managed to gasp, "What's going to happen to us?"

He shook his head. "You'll find out soon enough," he croaked. "For the present there's nothing for us to do but sit tight."

"You can do as you please," I panted. "But the first good chance I get, I'm going to bail out."

The chance I was looking for came a few seconds later. As we approached a city, which I afterward learned was Prescott, we passed over a stretch of woodland where the trees were crowded together. So close did we come to the tree-tops that I almost fancied I could hear the branches swishing against our tires. Climbing out on the running-board, I prepared to hurl myself away from the car. Taking a tip from the method used by railroad men in alighting from a moving train, I faced forward and leaped in the same direction we were moving. Head over heels I plunged, keeping pace with the car which sped along beside me. I managed to straighten myself out and to clutch at the branches which swept past, a fraction of an inch beneath me. I caught hold several times but the twigs I grasped either broke off or were wrenched out of my hands by the force of my own inertia.

I did succeed in retarding my progress somewhat, however, and soon I was crashing through the branches, bounding from one tree to another, bumping into boughs and clutching madly at everything that came within my reach. Fortunately the grove in which I landed was carpeted with thick, springy underbrush. Like a trained acrobat, I landed with my body curled into a ball and rolling along the ground. Except for a few minor scratches and bruises, I was uninjured.

I walked to Prescott, which was about a mile from the place where I had alighted, and went at once to the railway station. There I inquired about the next train for Los Angeles. The agent who sold me my ticket told me that I would have to wait for a little over two hours.

As I entered the Pullman car, you can imagine my astonishment when I saw in the seat across the aisle from me none other than Socrates Thoroughgood.

"Hello there!" I greeted him. "So you decided to bail out too, did you?"

"Yes. When I saw you land, I made up my mind to follow your example. But I had to wait until I hit the woods east of the city."

"What happened to your car?" I inquired.

"The last I saw of it, the old boat was still going strong. By now it is probably crossing the Atlantic."

"By the way, Mr. Thoroughgood," I remarked. "I wish you would tell me just what happened when I twisted that dohickey of yours."

"I CAN easily explain that," he responded. "You gave it too much air. The jack pushed the car so far out into hyperspace that it got caught in the ether drift."

"The ether drift?" I questioned.

"Yes. Doubtless you know that not only the earth but the whole solar system is drifting through space at a terrific speed. Luckily for us, at the time we became detached from the earth's

gravitational field, we happened to be at a spot which was near the front of the earth as it shot forward. The slip stream pushed us close to the earth's surface instead of away from it as would have been the case if we had been on the receding side of the globe."

"And suppose we had been on the receding side of the globe, as you call it. What would have happened then?"

"In that case, you and I would now be frozen stiff and would be drifting around in space somewhere between here and the planet Mars," he replied.

"I thank you," I grinned. "If you don't mind, I'd like to ask you just one more question. Now that you have lost your car, does that mean also the loss of your four dimensional parking device?"

"Certainly not. I can easily construct another one. But you may depend on one thing."

"And what is that?"

"The next one I build is going to be absolutely fool-proof!"

THE END

A Farmer's Wife and Meteorites

A rather amusing incident or series of incidents is told of happenings in the Western part of this country. A farmer's wife there, for some reason or other, took an interest in meteorites, of which there were a number lying about in the vicinity of their home, so she used to collect them, her husband taking no interest in the matter. When she managed to get an unusually large one on his wagon, he contemptuously threw it off. But presently a collector came along who was interested in these celestial visitors, and he began purchasing them from the farmer's wife, and we are told that the farmer at once changed his point of view and took a very active interest in the affair. Quoting the words of Ralph Waldo Emerson, we may say that he "Found Gold and Gems in These Dull Facts" and found that a meteorite was a "rock of diamonds" just like Emerson's "day of facts." All efforts to find the large meteorite mentioned above failed. So if meteorites come in the way of any of our readers, let them treat them with a certain degree of respect as they have a business standing.

One point to be kept in mind is that meteorites have never been asteroids—they are a distinct thing. When found on the earth they are meteorites, blazing through the night skies they are meteors and before they are meteors we may almost assume them to be nameless—they seem really to require three names.

The Fall of Lucifer; A Meteor in Milton

From morn
To noon he fell, from noon to dewy eve,
A summer's day; and with the setting sun
Dropt from the zenith like a falling star.
Milton—Paradise Lost, Bk. 1, L. 742 et seq.

Roadside Strategy

By CHARLIE MILLS

As old Franklin Jones came stomping up the path that led from the roadside filling-station to his comfortable farm cottage, he was obviously and naturally mad. Before he reached the cottage his rough voice could be heard. "Freddy, Oh, Freddy. Where in tarnation is that no account boy now?" Ma Jones looked up from her cooking, and as she wiped her hands on her apron said, "Well, Pa, as you might know, he is out in the workshop, fixing that radio for the Roger boys. He promised it for them by to-morrow, and another thing—you know he keeps himself in spending money by his radio work." Ma was always willing and ready to defend her "baby's" radio talent.

Freddy hearing the rumpus, stuck his tow head out of the workshop door and asked if it was time to relieve "Pa" at the filling station. "And well you know it is" fired back old Franklin. "I don't see why you couldn't relieve me once on time for supper." "I'm sorry, Pa," Freddy returned, as he passed on his way down the path, to the filling station. The old man went on into the house still grumbling and solemnly assuring Ma that "that boy never will amount to two sticks, as long as he fiddles around with coils and condensers and tubes and them other radio gadgets." But the flames of his wrath were soon squelched under the deluge of a supper table covered with an abundance of Ma's home cooking.

Freddy always ate early, and then took over the station from supper until closing time. When business was slow, as to-night, he spent the time with his short-wave set. He heard the police dispatcher at Frameton broadcast a report of a bank robbery in Louisville, and advising cruisers to be on the look out for a blue limousine with five men, carrying license plates 309227. For the next few hours he spent the time, between customers, by copying code.

About 11:00 P. M. while Freddy was thinking of closing, a blue limousine pulled up to the tanks. Freddy's first thought was of the police report earlier in the evening, as a second glance showed that it contained five men. A well dressed young fellow hopped out of the driver's seat and called to Freddy, "Fill 'er up son, we're in a hurry." Freddy went around to the rear and nearly passed out when he noted the license number 309227. It didn't help matters when he also noted, through the rear window, a covered object rising above the men's knees, about the right height, so he thought, for a "Tommy." (Magazine gun.)

The station's regular gasoline tank was empty. The filling had to be done with a can, which Tommy filled from a supply inside the station.

Freddy took the cap off the gas tank and to keep up his courage said to the driver, "Boy, she's almost dry!" "I know that," agreed the driver, "but just go ahead, fill 'er up and make it snappy." Freddy wished this bird would take his right hand out of that side coat-pocket, but since he didn't, there was nothing else to do but "fill 'er up," and so he did.

Before Freddy could empty the last can the driver was wanting to know "how much?" To which Freddy managed to mumble, "one sixty." The

driver tossed him a five spot, told him to keep the change, jumped in and stepped on the starter. Freddy paused in the doorway as he heard the machine cough, sputter, then come to life and go roaring down the road toward Fernvale Park.

Freddy decided to do a little unlicensed broadcasting. He got the police dispatcher on and started. "This is Freddy Jones, attendant at filling station five miles south of Fernvale Park on route 61. Blue limousine number 309227 just stopped here for gas, and left in the direction of the Park." "If you are trying to pull a fast one," came back the police operator, "We'll make it hot for you." "No no," Freddy assured him, "this is straight stuff, and you'll find 'em stalled, between here and the Park."

The police dispatcher evidently took Freddy at his word, for he immediately started three cruisers in the direction of the Park. True to Freddy's prediction, they found five of the Fuesetti gang stalled by the roadside, lights out and ready for action. But when the bluecoats unloaded with riot guns, they considered the odds too great and "put 'em up." It was the work of but a few minutes to frisk them, put on the bracelets and drive them to the station house, where they were mugged and assigned to nice new quarters.

The old chief himself, delivered the reward to Freddy, patted him on the back, and rather insinuated that nothing would be said about his being non-licensed.

It took a snooping reporter to bring out the facts. "How did you know," he said to Freddy, "that these birds would be stalled?" "Well," Freddy explained, "you see, we keep the pump next to the high test for tractors, and as their tank was nearly empty, I finished filling it with kerosene." The reporter tried to get more of a story but he couldn't get in a word for Pa Jones, who kept telling the world that "Freddy is the smartest boy in Bennett County, yessir, knows more 'bout radeeo than the feller which invented it. Allus did know he'd git sommers. Goin' to give him the workshop outright for a broadcastin' station."

Ma Jones could not manage words, but the glances she bestowed as she patted Freddy's tow head, spoke eloquently.

Freddy never mentions that he was so scared that he gave them the kerosene by mistake.

THE END

In the Realm of Books

Conducted by C. A. BRANDT

"Creations Doom," by Desiderius Papp. Published by D. Appleton—Century Co., Inc., New York. 287 pages. $3.00. Translated from the German "Zukunft und Ende der Welt," by H. J. Stenning.

Mr. Stenning, the translator deserves a great deal of credit for a perfect translation. About two years ago the reviewer read the German original and wondered how long it would take to bring out in English a really worth-while book and I was agreeably surprised that it has only taken two years to put a book of this nature before the reading public.

"Creation's Doom" is, generally speaking, a description of the probable future fate of man and of the ultimate fate of the planet on which he lives.

"Creation's Doom" is written with true prophetic vision based on a strictly scientific basis. In the beginning of the book we read of a cosmic castrophe—the destruction of a star which had drifted into a cloud of cosmic dust, became terrifically heated and finally exploded. This cosmic calamity is pictured towards the finish of the book as the final end of our earth and of our solar system.

In the first part, which consists of four chapters, the author gives a clear and concise review of the past history of the earth and the life thereon.

Now and again Dr. Papp uses truly marvelous parallels to drive home certain scientific facts. For instance—to reduce to understandable terms the age of the earth and the relative short time in which man has existed, he reduces the computed age of the earth of two and half billion years into a twenty-four hour period, which assumes that the entire earthly drama, from the dawn of creation to our age of electricity, has been enacted between one midnight and another. In that projection primitive man would not have stepped upon the world's stage thirty-four seconds before the twelfth hour had struck; and the duration of the whole of our proud civilization would have been accomplished in the sixth part of a single second. The second part of the book is devoted to highly fantastic speculations concerning possible physiological and psychological changes of man and a fairly descriptive preview of inventions to come.

In the closing chapters the author considers all possible cosmic hazards likely to endanger the earth—such as volcanic activity, astral collisions, destructive cosmic rays, etc., and from these ominous possibilities, we go into the last chapters describing the cooling of the sun, the extinction of the human species; the final coming into power of the insects, then the end of all life and the collapse of the universe ending with a spectacular explosion of the sun.

"Creation's Doom" is an exceedingly interesting, somewhat disturbing and vastly entertaining book.

"His First Million Women," by George Weston. Published by Farrar and Rinehart, Inc. 312 pages. $2.00.

The Theme: "Sudden sterility striking humanity" is an old and very much abused one. I have read at least two hundred stories based on this idea, but so far not one of them has been worth while. Occasionally, however, a publisher, apparently not well versed in scientific fiction, "falls" for one of these stories.

The present book has at least some charm as it is written in a sort of flippantly humorous manner, but in my opinion only a Balzac or a Rabelais could do justice to this particular theme.

The story goes something like this: All of a sudden with the approach of a comet all human reproduction ceases. The nations which always require more and more soldiers are in despair. Even very large bonuses for the production of babies, offered by the various governments fail to produce a single child. Through the Zoometer (conveniently invented in the first chapter) an apparatus indicating virility—one David Glendenning is the only man whose virility registers one hundred. His affair with a pretty girl results in due time in a baby and the embarrassed father flees to the Canadian wilds. He is pursued, found and brought back and then by specially enacted laws, he is married and divorced over and over again until the disappearance of the comet restores humanity to normalcy and babies.

The book is faintly amusing, but the illustrations are terribly distressing. They are awful.

"Pirates of Venus," by Edgar Rice Burroughs. Published by Edgar Rice Burroughs, Inc., Tarzana, California. 314 pages. $2.00.

"Pirates of Venus" is the fortieth book from the prolifically productive pen of the inventor of Tarzan.

Burroughs first made us "Mars" conscious, but apparently Venus will be our stamping ground for some time to come. The book, strictly speaking, is a juvenile, but will undoubtedly be read with enjoyment by unsophisticated grown-ups.

The story runs somewhat like this: Carson Napier, a young and enthusiastic inventor decides to visit Mars on a giant, rocket torpedo

of his own design, but is forced to land on Venus after a perilous flight. He is captured by a strange race, the Vepajans, who inhabit the planet. Napier makes friends with his captors and learns to speak the language of Venus.

After some months on the planet he falls in love with a beautiful girl whom he rescues from a band of Thorists, criminal revolutionists, who wage war on the Vepajans. Napier goes on a hunting expedition with a Vepajan named Kamlot. They are kidnapped by Klangan (bird-men), who carry them off to a ship where they are held prisoners by Thorists. Kamlot is very much upset to learn that a number of Vepajan women have been kidnapped and taken aboard another Thorist vessel. His chief concern is for a girl named Duare. Napier engineers a mutiny, and the men take possession of the vessel. They then go into pursuit of the companion ship, the Sovong, and rescue the Vepajan women captives. Napier discovers that Duare is the girl whom he rescued from Thorist kidnapers in Vepaja. He tells Kamlot that he loves Duare and intends to marry her, but is informed that this is impossible as she is the daughter of the Jong of Vepaja.

The Sofal captures another ship, the Yan, and a high Thorist official named Moosko is taken prisoner. Moosko plots with a Thorist spy named Vilor, and with the aid of the bird-men they kidnap Duaro and fly to the shore. Napier is on deck giving orders for the Sofal to go in pursuit of the fugitives when a huge wave sweeps him overboard and after other thrilling escapes and adventures, the villains are overcome and the heroine and hero emerge triumphantly as usual.

"After Worlds Collide," by Edwin Balmer and Philip Wylie. Published by Frederick A. Stokes Co., 443-449 4th Ave., New York. 341 pages. $2.00.

This book is a sequel to "When Worlds Collide," reviewed in our October, 1933 issue. Like the first, it has been published seriously in one of our contemporary magazines.

It always seems to me that when the critics, who are extolling the virtues of certain books, and who have to keep a weather eye open on the advertising space contracts made by the publisher of such masterpieces, come across an unusual book like "When Worlds Collide," they are stumped. If well read, H. G. Wells is cited and if exceedingly well read, they mention the author, Olaf Stapledon.* I entertain serious doubts if any of the standardized reviewers have the faintest idea of the educational value of scientific fiction.

Well, anyhow, I like "After Worlds Collide" very much, and I am quite sure that most of our readers will do the same. To whet your appetite, I am giving you herewith a brief survey of the book.

I assume that you have read "When Worlds Collide" and if you have not, it is your own fault. The story runs somewhat as follows:

The small crowd of hand picked men and women who have escaped the destruction of the earth finally land safely on Bronson Beta. They have landed on the shore of a great ocean, where under the leadership of the scientist Cole Hendron, they establish a camp. Extensive explorations reveal a sweet water river near by, a valley already lush with moss and grass, and a marvelous paved road leading to a city enclosed by a gigantic dome of transparent metal. The explorers find the city as new and clean as if it had just been built. The water, lighting and heating system, function perfectly and the discovery of the portrait of a woman, differing but slightly in appearance from the rest of real women as well as the discovery of enormous stores of well preserved food stuffs, strengthen their belief that the long dead inhabitants of Bronson Beta were a very superior race.

They also find automobile-like vehicles, also flying machines, the motive secret of which they finally discover (here the authors could have given quite a thrill to their readers by the discovery and subsequent reviving of a vaultfull of Bronson Betans, who had survived in suspended animation, but probably the authors are saving this for another sequel). They also discover ways and means to decipher the visible and audible records left by the Bronson Betans, but then serious trouble develops. Aside from the American ship, two other ships have landed on Bronson Beta, one from England and one from Soviet Russia. True to Soviet or Trotzky principles the Soviets want to "hog" it all. They already had captured the English survivors and by settling in the key city containing the sources of power, they were well on the way to owning the planet and started war with the American survivors for absolute ownership of the planet. However, through the courage and resourcefulness of a girl called Marian, who does a "Charlotte Corday"—the nasty Soviets are overcome and the way is paved for a peaceful and scientific continuation of the human race on the Bronson Beta.

As I pointed out in my review published in our October 1933 issue, I would have labelled "When Worlds Collide" "super-excellent" and if "After Worlds Collide" had been written as a first book and not as a sequel, I would likewise have been compelled to call it not only good, but excellent.

Therefore, dear readers, if you have not read the sequel in the magazine, by all means get it as a book. It is worth the price.

* Olaf Stapledon wrote: "Last and First Man" published by Jonathan Cape & Harrison Smith in 1931.

DISCUSSIONS

In this department we shall discuss every month topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25c to cover time and postage is required.

A Correspondent in the Philippines Has a Good Word for AMAZING STORIES—He Wants to Open Correspondence with Some of Our Readers

EDITOR, AMAZING STORIES:

I believe that yours is a truly wonderful magazine and I must congratulate you for its great success as giving well-worth reading material. It is a magazine for the searching and philosophical mind, and those who are looking for the romance of scientific pursuits should find it to be both useful and agreeable. Indeed I have recommended it to all my friends here and abroad.

The editorial in the January issue is fine; the stories are very interesting and I read them time and again with great enjoyment. I must also add that I can hardly wait to read another story by Harl Vincent, the author of "Master of Dreams."

As a special favor, I ask that you publish this letter in your column, so that other readers who desire to correspond with an extremely liberal fellow of the tropical far East—about life, the world, and the marching time—shall have the chance to do so. I promise to answer all letters and wish to assure everyone of an interesting acquaintanceship to the best of my ability and to the tune of pen, paper and ink.

In conclusion—lots of luck to AMAZING STORIES.

Fernando R. Madarang,
P. O. Box 3228,
Manila,
Philippine Islands.

(You will find in the April issue another story by Harl Vincent, and we have every reason to believe that you will see many more by the same author in future editions. We are very glad to publish your letter and hope that it will have the desired result of bringing you letters from correspondents thousands of miles away from you. We appreciate your good wishes for AMAZING STORIES.—EDITOR.)

A True Appreciation of AMAZING STORIES—Some Excellent Suggestions to Be Carried Out, If——

EDITOR, AMAZING STORIES:

Was the February issue of my favorite magazine a pip! Ask me! Go ahead! Ask me! And how! It's the best issue since—since—well, there never has been a better issue since I first read A. S. And, incidentally, it is the second anniversary since the first issue I read!

It is the best science fiction magazine on the market! Bar none. There's no question in my mind about that! The stories are so refined compared to other rough written stories of other S. F. authors.

But what I started out to say was how much I liked the February issue. Easily, "Terror Out of Space" was the best story in the issue. It's got the makings of a wonderful narrative. You know, what is so good about the story is that it is drawn out. By that I mean, the hero doesn't jump into a space ship the first thing without any reason or knowledge of how it comes about—but I must hurry on, I haven't much time. "Triplanetary" comes next. This story is progressing along finely. Only being a reader for two years, I am not prepared to say whether it is up to Dr. Smith's standard or not. (But I don't know how it could be much better.) Next I can hardly choose. But—well—I can't think of the name of the story, but it was about time traveling. Anyway, it was next. A close follower was "The Regenerative Wonder"—*that* was different.

The rest were all good. But who ever heard of an all-complimentary letter? So here goes!

Have smooth edges, cut out some kinds of advertisements, have more pictures in each issue—and that's *all* that is wrong. (Oh, I could add, "Have smooth paper—but what good would that do—it's next to an impossibility.) Well, anyway, long live AMAZING STORIES.

J. H. Hennigar,
East Tawas,
Michigan.

P. S.—Oh, yes! One more—*return to large size*.

(Your critical notes are very good. A story needs to be somewhat prolonged in the telling. The French have a saying that "style" constitutes the man, and it is astonishing how far style goes in affecting the merit of writing and narration. AMAZING STORIES is going on so well that there is really a chance that the suggestions at the end of your letter may be carried out some time in the future.—EDITOR.)

A Reader Who Started with Us About Eight Years Ago When a Very Young Boy

EDITOR, AMAZING STORIES:

This is my first letter to the Discussions Columns since June, 1927, but I am still a substantial reader.

I started reading your mag. one bright morn-

ing in 1926. I am 17 years old, so I started reading science fiction at an early age.

I enjoyed every issue of your magazine since I started reading it until you got the idea that science fiction mags should be printed on cheap pulp paper and have uneven edges like a 10-cent "Wild West" mag. I like the new size, but let's have even edges and more pure, unadulterated science. But I would not mind in the least having reprints. I would enjoy reading some of the stories again.

I am very deeply interested in the progress of science. If it is possible to do so, I would like very much to have the mathematical laws of the inverse square explained in your magazine.

Please let us have some more mysterious covers with pictures of fish, dragons, etc.

I am glad to see Dr. Smith's "Triplanetary" although I do not like interplanetary stories generally, but if Dr. Smith or Mr. Campbell, Jr. writes them, I go wild over them.

A good while ago someone wrote "Radicalite" and a sequel to it. I do not remember who wrote them, but they were certainly good.

Please pardon any mistakes in spelling and wording of this letter. I have had eleven years in school and American English; I still know very little about this language.

Joe Ruffin, Jr.,
1725 Marguerite Avenue,
Anniston, Alabama.

P. S.—Let's have a larger Discussions Section.

(Your letter calls upon us to subtract eight from seventeen which gives nine years as the age at which you commenced reading AMAZING STORIES. There is a well founded belief or opinion that it is very difficult to write for children, so we feel that very young readers who enjoy our stories may be taken as giving true compliments to our authors' work.

The law of the inverse square may be understood from a simple example. The further you are from a source of light the less light you will receive, and the intensity of the light received at any distance will vary with the inverse square of the distance. Assume a source of light, so small in area as to be virtually a point. Call the amount of light received on a given area at the unit distance *a*. Then at the distance 2 the light will be in the ratio of the inverse square of 2. The square of 2 is 4 and the inverse square is ¼. Therefore, by the law of the inverse square, the same card at twice the distance will receive one quarter the light or *a*/4.—EDITOR.)

The Law of the Inverse Square

Editor, AMAZING STORIES:

This is my first contribution to the Discussions Column of "THE" magazine, let me congratulate you on your fine periodical.

In the main your stories are up to and above par, and what is particularly gratifying, perfectly clean and wholesome. The only fault that I can find is with some, not all, of the stories you publish having "Time Travel" as a theme. Some of these, it seems to my mind, are overloaded with a great deal of technical complexities that the average reader would fail to comprehend, as if the author had allowed his knowledge (or should I say lack of knowledge, since little seems to be known of this branch of science) of the subject to run riot. I must admit that a great deal of it is away over my head, and since you admit that A. S. exists primarily for the amusement of readers, too much of the sort of thing I have mentioned only results, in my case, anyhow, in utter boredom. Of course, I am only one among your thousands of readers, and my dissatisfaction in this regard may be only due to ignorance, while others may appreciate such stories as being possessed of a better understanding of the matter. My preference is for interplanetary stories, of which I could never get a surfeit, for, like many other would-be adventurers, I like to read of new and strange worlds and to explore them at least in spirit. I often sit and ponder, conjecturing on the possibilities of life on other planets, and my very limited knowledge of conditions existing on other worlds and of science in general results, I suppose, in some very fantastic theories.

I would like to comment on a remark made by a correspondent in one issue of A. S. He objected to stories in which telepathy was used. I disagree, since my contention is that nothing mankind uses is unnatural. Man uses what we term artificial light, but it is not unnatural, because man is a product of nature and so are the metals he uses to make the machinery which produces that light, so we come to the conclusion that the artificial light he uses is also natural. In the same way telepathy is, under a given set of conditions, quite normal and natural, and in our present environment telepathy might be considered abnormal but never unnatural. Man in the course of evolution may come to a stage where environment and natural conditions will make the spoken word insufficient or even impossible, and then he would naturally turn to telepathy as a substitute for speech. Such a transition might require centuries to take place, but the wheels of evolution turn slowly; still I am of the opinion that such a transition is at least a possibility, whereas your correspondent contends that telepathy will never be used, being unnatural.

In conclusion I must tell you that A. S. is very difficult to obtain here and, although I have only been reading the magazine for twelve months or so, I have one consolation; I can buy all the back numbers available from sec-

and-hand book shops, and these, together with new numbers, ensure me a good supply of science fiction.

Wishing you and A. S. continued success,

Fred'k G. Seymour,
79 Merton Street,
Albert Park,
Vic., Australia.

(You say you have little to offer in the nature of criticism, but we find that you have a good deal. We are definitely anxious that our stories should not be above the heads of our readers, and of course when time travel becomes a topic, we are dealing with something beyond anybody's comprehension. We have received very few letters suggesting that our readers are bored by the stories; even your preference for interplanetary stories we sometimes feel is being catered to vigorously. We let your interesting observations on telepathy speak for themselves.—EDITOR.)

The Perfect Magazine

Editor, AMAZING STORIES:

Every now and then I get a groggy idea into my head—and now—"My idea of a PERFECT AMAZING STORIES." Nearly all of my points have been used before in the magazine, but never simultaneously.

First, and essentially, the magazine must be nine by twelve inches, with a grade of paper as was used in the April, 1933, issue. The cover would be painted by H. W. Wesso, and with subdued tints, such as the October, 1929, cover. The title and contents page should resemble those employed during 1929, but the editorial should be two or three pages long, as now, and not one page, as formerly. The inside full-page illustrations should be done by Morey. His best style, I think, was put into the drawings for "World of the Living Dead." Of course one illustration a month by Wesso would add variety.

"In the Realm of Books" should of course be included. Mr. Brandt's comments are always interesting. And last but by far not the least—we should have the present enlarged "Discussions." And one other thing; the old "Comet-head" title on the cover should be resorted to.

And now, Mr. Editor, we have indeed a perfect magazine. The stories, you notice, are already perfect. I have been harping about *make-up*.

Lewis F. Torrance,
802 College Avenue,
Winfield, Kansas.

(There are many considerations affecting the make-up of a magazine. The opinions of readers are not greatly devoted to the mere mechanical details of a magazine; the make-up is of much less importance than what goes into it. There are factors which affect and which often control absolutely the question of make-up. Your suggestions are so interesting that we are glad to receive them, even if we cannot act upon them at present. We thank you for your good opinion of the stories, which after all are the main thing.—EDITOR.)

The Kind of Letter an Editor Enjoys

Editor, AMAZING STORIES:

With rocket tubes going full blast, I whizzed toward the newsstand, as the air whistled through my overworked engines. Hovering over the stand, I rapidly adjusted my gravity belt, switched on my body rocket tubes, and darted for my near destination.

My face was avid with enthusiasm as I picked up the latest copy of AMAZING STORIES, and gave the robot the 25 credits. Then, fearing that I might somehow relinquish my hold on the precious issue, I strapped it securely to my belt.

I was held in abeyance till I landed on the roof of my house. Then, hurrying to my room, I immediately commenced to envelope the contents. I recovered from my reading lethargy, hours later, with my head roaring and senses reeling. And why not?

Look at the array of authors bound together between two covers:

Edward Elmer Smith, Ph.D., Harl Vincent, Joe W. Skidmore, Isaac Nathanson, Philip Schuyler Miller, David H. Keller, M.D.

Of course we mustn't forget the poem "In 1999," by Bob Olsen. Warren F. Doane has the honor of being the only new name. With that combination you can't lose. You have certainly a lot to brag about. AMAZING STORIES is stepping fast; don't lessen your pace!

RAYMOND PEEL MARIELLA,
5873 Woodcrest Ave.,
Philadelphia, Pa.

P. S.—Would enjoy correspondence with any STF fan!

(You certainly can put lots of spirit as well as solid criticism into a letter. We have enjoyed reading it and feel certain that our readers will enjoy it as we did.—EDITOR.)

A Letter of Good Criticism from a Twelve-Year-Old Reader

Editor, AMAZING STORIES:

When I first came to look at the magazine I did not approve of its appearance. The cover was dull and thin. This could be corrected with brighter colors and better paper. The science answers to the questions were widely spread. Why not have them all on one page. In the stories the date of the incident should be given. I am only twelve years of age and one of your youngest readers. Being so young I do not appreciate the love in the stories as others would. The stories are very good. AMAZING STORIES is very easy to understand. I can understand it perfectly even if I am so young. "The Mentanicals" by Mr. Flagg is the best story

in the April issue according to my opinion and I would like to read more of his work. In the February issue "The Regenerative Wonder" is exceptionally good. And the idea of putting one of Poe's compositions in the book monthly is excellent. I hope to stack up quite a pile of A. S. and will not miss an issue. When a cover gets old I patch it up with paper.

Howard Reiss,
975 Walton Avenue,
Bronx, N. Y. C.

(We give this letter as an example of criticism from a very young reader. As the science is scattered throughout the stories, science questions certainly must be widespread. We really would like to give twice as much space to them as we are doing now. Your letter does you great credit.—EDITOR.

Our Stories—Notes on Time Travel and Its Contradictions

Editor, AMAZING STORIES:

I have been buying your magazine for over a year and I have finally gotten enough energy to write you and express some views of mine. The first is about your stories. I think that you have some fine writers who turn out an excellent group of stories, but after considering them I would like to know if your stories are scientific or just some adventure stories with a scientific setting. I especially refer to Dr. Smith's tales. I will not deny that they are some of the most interesting and exciting stories that I have ever read, but the science in them is used only to produce a thrilling story, not to expound any ideas, or to give information; in other words, I think that he takes too much of the science in his stories for granted. This applies to most of the rest of your authors also, I just used Dr. Smith as an outstanding example.

I have before me the third installment of "The Terror Out of Space." This story is one of the most plausible stories of Science-Fiction that I have ever read. The main points in its favor are that it does not assume that the earth is victorious in all things, or even that it is better than average; it just gives it as is and leaves all the super-science to another planet that might very possibly have it. This other planet does not come in and invade the earth in order to be gallantly defeated by the hero in the nick of time; instead, it comes in much the same way as the white men "helped" the Indians, with the exception that Mars is a good deal more fair. Finally, the hero is not a super-scientist, and does not frustrate all the enemies' plans; instead, he is a quite human man who is content to take the back seat when necessary. Altogether it is a thoroughly enjoyable, plausible story that is being enjoyed by yours truly.

My last point concerns the much discussed theory of time travel. For some months I have been trying to formulate a convincing argument and was much gratified when I found it in one of the Jameson stories (incidentally, let me say that I enjoyed them very much). I believe that physical time travel is impossible because of its absurdity. For example: supposing you invent a time machine and go back fifty years into the past, meet your parents when they were children, and kill them. Then you would never have been born, you wouldn't have invented the machine, and therefore you wouldn't have killed them. You see how silly it is. Now if you went into the future, discovered that a certain man would change the destiny of the human race, went back and killed his parents before he was born, and thus contradicted the future, it would be just as bad. Finally, if you believe that you can travel into the past, it certainly follows that you believe that people who have died are still alive, which is not so.

Robert Deutsch,
5108 Kimbark Ave.,
Chicago, Ill.

(We feel that you are perfectly right, even obviously so, in what you say about time-travel, but it has given a basis for some very good stories. Your letter is so good that it really needs no comment from us, as it tells its own story very clearly.—EDITOR).

A Letter of Good Criticism

Editor, AMAZING STORIES:

"Peril Among the Drivers" surpasses all of Olsen's previous works. It could well stand a sequel, which I hope is forthcoming.

All of the March issue was excellent—except that Poe story! It seems impossible for Science Fiction editors to learn that all of Edgar's writings can be secured almost anywhere. The majority of homes have complete sets of them. So why reprint what nine-tenths of the world has already read? This doesn't mean that I'm against reprints. Far from it! But what is wanted today are *rare* classics, such as "Blind Spot," "Three Lines of Old French," "Face in the Abyss," "People of the Pit," etc.; stories that have stood the test of time, and haven't lost by the standing. The "Blind Spot" is mentioned a great deal when requesting reprints, and yet has not been used since 1921; while "The Diamond Lens," requested by only a few, has been reprinted several times. Now, that isn't quite fair, is it? Of course not.

Am glad to see in Discussions that you are trying to make A. S. the same in form, etc., as Harpers. If this could be done, it would lift Science Fiction to unknown heights. The best of luck! . . .

Yours for A. S.,
Alvin Earl Perry,
Box 265
Rockdale,
Texas.

("The Diamond Lens" is one of the most famous stories in the English language. The author wrote but little. Recently "The Diamond Lens" with another story of O'Brien's has been published in a very expensive *de Luxe* edition. We feel also that some of Edgar Allan Poe's stories are very apposite at the present time, when his 125th anniversary has just been celebrated. We have all sort of plans for the future of AMAZING STORIES and live in hopes of carrying them out.—EDITOR.)

A Plea for Human Interest Stories

Editor, AMAZING STORIES:

After noting the various complaints in your Discussions Columns, I'm just beginning to realize that most readers, after finishing a good story, sit back with a contented sigh—and forget to write. But just let one notice something they *dislike*—and beware! For instance, one reader (Mrs. Buller) expresses a dislike for "mush," "sex stuff," "cruelty" and "superstition." She wrote, however, with the intention of keeping these evils out of your stories. With all due apologies to the lady, I must say that mush, in the hands of skillful authors, can become pathos. "Sex stuff," not overdone, is agreeable with me. Your aim is to please the majority of readers, and I believe most of these are normal, intelligent men. You won't find many men who shudder and throw your magazine aside when the charming heroine enters. As for cruelty—many of Poe's works might be termed cruel, don't you think? Apologizing to Mrs. Buller again, my opinion is that young readers who must be sheltered from such influences are in the minority. We *want* to be shocked, and the more grisly the better we like it. Take away the pathos, the cruelty and the love element and what have you? A drab story, in my estimation.

Other readers object to such stories as "Jeremiah Jones, Alchemist," and "The Good Natured Pendulum." For my part, I liked them. You are quite right Mr. Editor, when you say "A little nonsense now and then, etc." I might add, "Variety is the spice of life." I certainly enjoy "heavy drama," but between killings a little chuckle doesn't go amiss. You Editors realize of course, that only a small portion of your readers write you, but your only way of judging their likes or dislikes is by the letters you receive. Therefore, I hereby resolve to write and tell you when I like a story, else the majority of lazy satisfied readers may be ruled by the few who like to write!

Now for science. Well, I read stories for their adventure and excitement first, or their power to make me forget everything except the story itself. Give me a good plot and an author who knows how to develop it, and I'm happy. However, I like to be reassured that these strange happenings are not wholly without rhyme or reason and that's where the science enters. I'm ashamed to admit that I'd accept the most ridiculous explanations, for it's nearly all "over my head." There's no disputing tastes, so if some readers want science, let them have it.

Before closing, I'd like to disclose my real reason for writing. As you modestly admit, you have excellent authors and I have nothing but praise for the stories they have written in the past, but for the stories they will write in the future, will you accept a hint from an ardent admirer of your magazine? Can't they stretch their imaginations even more? In my opinion, the science fiction writer has an almost—no an *absolutely*—unlimited field. The wildest dreams are possible plots. Very good stories can be written without an iota of science to back them up. For instance, I remember "The Finger in the Past" in the November 1932 issue was wholly impossible and unscientific, but it was amusing and good reading. Put in a few short stories such as this and the two mentioned above in each issue.

I'm sorry, but I'll just have to take time to applaud my favorite authors and artists. Here they are, but not in any order at all: Miles J. Breuer, Dr. Keller, Fitz-James O'Brien, Coblentz, Verrill, Merritt and the favorite artist is Morey. And I almost forgot another author, Robert Arthur, Jr., who wrote "Theft of the Washington Monument." Of course there are scores of others, but it would take all the Discussions Columns to name just the good ones. (Take your bow, Mr. Editor.)

Now I'll really close, but remember—plenty of horrors, helpless heroines and human interest.

J. C. Fields,
Buchanan, Ky.

(A writer can overdo the topics alluded to, but there is no necessity of excluding them absolutely. "The Good Natured Pendulum" which was written a good many years ago in the last century, was in a way, a model science-fiction story based on the period of the oscillation of the pendulum varying as the square root of its length. We have published several stories with a touch of humor, sometimes more than a touch, and for some mysterious reason our readers did not seem to care for them. You must realize that we get many more letters than are published in these columns and nothing would please us better than to give more, but limitations of space forbid this. Your names of authors are well selected. Fitz-James O'Brien, who fought in the "War between the States" died many years ago. We feel that his sufferings in the war may have shortened his life—EDITOR.)

A Letter from an Army Man About Our Magazine, Authors and Illustrations

Editor, AMAZING STORIES:

Having been a reader of "AMAZING STORIES" since the first publication of the same, I think

that I may be privileged to put some of my thoughts into type.

The two points that satisfy me greatly, at present, are: your very high grade illustrations; imaginative—yes—but that is what is wanted. Morey is without a peer in his field. Paul once could lay claim to being the leader in it, but he is completely overshadowed by Morey's talent; and your size of the magazine itself. It was an improvement, convenience in carrying and in reading have been obtained by the smaller size.

The stories are excellent—you are a great deal in the fore in your authors and their production. Your rivals although quite often giving good issues have not the consistent high level you have maintained.

Morton H. Leroy,
909th Coast Artillery (A. A.),
Army of the United States,
New York City, N. Y.

(This is so earnest and strong in appreciation of our work, that we feel as if we should almost blush to print it. While we encourage the projection of brick-bats by our correspondents, such letters as this are a true comfort.—EDITOR.)

A Request for AMAZING Reprints—The Question of Artists—An Alleged Telescope of Hitherto Unattained Power

Editor, AMAZING STORIES:

I am going to start out this letter with two constructive (I hope) criticisms. Please don't mistake them for so-called brickbats.

Firstly, why not have some honest-to-goodness "Amazing" reprints? I don't know how the other readers feel about it, but these reprints of Poe and Verne seem so antiquated and outmoded that they have absolutely no appeal at all to me. I would suggest that you reprint a couple of Murray Leinster's early gems such as, "The Mad Planet" or "The Runaway Skyscraper." Also I'll bet that "The Blind Spot" by Hall and Flint would make a big hit. At all events why not give it a try, and see what the reaction to them would be?

Lest you think I am a little too hard on Morey, I have to admit he did a really fine job on the cover for February.

I was certainly glad to see Philip Nowlan back again on the list of your authors. It's been a long time since he wrote anything for AMAZING STORIES. He's written some corking good stories in the past, and "The Time Jumpers" was no exception.

Here's an item that ought to be of some interest to your readers. A Canadian scientist has recently discovered a new principle on which to build telescopes. It embodies electricity as the magnifying medium instead of a lens or mirror. The one now under construction will be as powerful as a 2000 inch reflector would be. It will undoubtedly revolutionize the science of astronomy.

Robert Tufts,
61 Rathbun Ave.,
White Plains, N. Y.

(We believe that it will be many years before Poe is antiquated and those who read Verne's works attentively will find that he is a very wonderful writer. We advise you to reserve judgment on the new telescope until some definite reports about it are received.—EDITOR.)

A Letter from a New Reader of A. S.—Inquiries and Notes on Authors—Reprints

Editor, AMAZING STORIES:

I am a comparatively recent reader of your magazine, but I have formed a few opinions on its contents. From what I read of the other readers' comments, there seems to be quite a question raised over the subject of reprints. Speaking for myself, I would like to see some of the stories reprinted.

I cannot see why some readers object so to the change in size, unless it is because they are filing them away.

What has happened to J. W. Campbell, Jr.? Let Neil R. Jones, Stanton A. Coblentz, Bob Olsen and P. Schuyler Miller continue their good work, but why do we have to have Edgar A. Poe in our magazine? We can always find his work in nearly any library and besides most of us have already read his stories. I would like to hear some other readers' opinion on this subject.

Since you have joined the N. R. A. why not raise the price slightly and then maybe we could have smoother edges (?). Your edges are, however, smoother than some other science-fiction magazines. Well, I hope you keep up your good work in the realm of science-fiction.

G. Hunter,
604 Preston Road,
Morgantown, W. Va.

(As far as we can see, the tendency among magazine publishers is to adhere to their present prices. We feel that AMAZING STORIES is so individual that it is well worth the price asked for it. As far as Edgar A. Poe is concerned, you will find something said about him in answers to other letters.—EDITOR.)

Does the East Rail of a North and South Railroad Wear When a Train Is Running North?

Editor, AMAZING STORIES:

I want to call your attention to an error made in the January issue of A. S. "The Rotating Earth," the editorial of the magazine stated that the earth's rotations would cause the west rails to wear more than the east rails. You are correct in the statement, but you go on to say that on the train's trips south the east rails

receive wear caused by the rotations of the earth. Here you are wrong, for the east rails never wear as a result of the rotations of the earth. The wheels are worn on both sides of the train, but not the east rail.

I want to make an announcement here. Any boy (or girl) who goes to Jefferson High School in Brooklyn, New York, and who is interested in this magazine and in science in general, I would like to hear from you. (Don't all answer, now.)

I know that my letter is a bit late, and hope that you have my letter published before someone beats me to the correction.

"Exile of the Skies" was the best story I have read in a long while. I want to throw a brick-bat at you. I implore you to refrain from putting any of Poe's works in our mag., as, to be frank with you, the mag. costs too much to read in A. S. what anybody can read in any library. Do you readers agree with me?

As my pile of rocks is about out, I will hand you a rosebud. You edit the best science-fiction mag. on the market, according to my estimation. I suppose I am especially partial to you because I was introduced to the literature by A. S.

Horace W. Christopher,
Box No. 523,
Teague, Texas.

(A railroad car at the Equator would have a lateral speed of about 1000 miles an hour. If traveled due north it would gradually decrease in lateral speed, so that when it reached the pole this speed would be zero. It would seem that something had to check the speed and this would certainly tend to wear out the right-hand rail which is the east rail.—EDITOR.)

Some Back Issues of AMAZING STORIES Wanted —Poe's Stories—"The Four Dimensional Escape"

Editor, AMAZING STORIES:

In your February issue your best story was "The Time Jumpers." What was the idea of two serials? I was counting on Bob Olsen's "Peril Among the Drivers." I did not like "A Descent Into the Maelstrom." This kind of a story is out of date. One of these stories are fine every once in a while, but to have them every month is over-doing it. You can get these stories in practically every library and there are not many readers who would rather have an obsolete story than one of Smith's or Keller's.

Let me add my voice to the fans that want *smooth edges* and the "Skylark" stories in one *issue. I realize that this is an additional expense*, but I am sure it would get more readers.

I started reading your magazine in 1929. I was twelve then. Pretty early starting, eh?

I need the following copies to round out my collection: Vol. 1—1, 2, 3, 4, 11. Could you help me in this matter?

One of the best stories I ever read was "The Four Dimensional Escape."

G. L. Bedford, Jr.,
42 Harvard Road,
Belmont, Mass.

(The one hundred and twenty-fifth anniversary of Edgar Allan Poe has recently been celebrated and we have published some of his stories, which certainly belong to the time. We may not agree with George Bernard Shaw in all things, but he has given his judgment on Poe in connection with the celebration, stating that he is the greatest of American writers. Publishing your request for numbers may succeed in getting them for you. Possibly they can be supplied here by addressing our Circulation Department.—EDITOR.)

A Letter of Vigorous Reproof—Who Wants to Be an Editor, Whose Business Is Pleasing Everybody or at Least Trying to Do So?

Editor, AMAZING STORIES:

A friend of mine never votes. "What's the use?" says he. "My vote doesn't mean a d—n anyway." I feel the same sort of hopelessness in writing you. Still, his vote *might* swing an election. My voice *might* sway you if you are in doubt.

This letter is a letter of protest. Subject: Reprints. Questions: Why, oh why must I be punished so? I have been a good and faithful reader. I have read each and every issue except the second number of the first volume. Even at the very beginning I hated the number of reprints. Jules Verne's stories in particular were an abomination—his fiction is hopelessly old-fashioned. Reading his stories is about as thrilling as reading about a journey in a Ford—written in a tone of awe at the mechanical marvels of said Ford. And yet each issue I dread seeing you announce, triumphantly, that at last you are going to publish that masterpiece of Science Fiction, "20,000 Leagues under the Sea".

In the last two issues you have two stories by Poe. God help us. Why? His stories are readily available. From the tone of the letters in your column of discussions, your readers are not illiterate. It is reasonably certain that most of your readers have read the works of so eminent an author as Poe. The very fact that they read the type of stories you publish in your magazine makes this certain. I am speaking from experience. One of the first volumes I selected for my library was a complete "Poe". The few of your readers that have not yet read Poe may easily satisfy their craving. They will find him in any Public Library worthy of the name, or in their grandpa's collection of books.

Mr. Editor, if you are so certain that your readers want reprints, why not confine them to special issues containing nothing but reprints as you did in a recent Quarterly? Why risk

antagonizing your readers who want *new* stories?

By the way, the before-mentioned Quarterly must have been a terrible disappointment to you in the matter of sales. It contained, if I remember correctly (I did not buy that issue, of course!), "The Second Deluge", by G. P. Serviss; "The Menace", by Dr. Keller, and, yes—believe it or not!—a story by Verne. May I be kicked to death by little red ants. (I crave your pardon, Dr. Smith.)

Mr. Editor, I admire your courage. Admire is too weak a word. I hold your courage in awe. But your judgment—! The "Second Deluge" is readable, but it is below the average of *good* Science Fiction. "The Menace" is the best of the collection, but it is not "tops" in science fiction. I will say no more about Verne—my typewriter is hot already. Seriously, Mr. Editor, did you expect a sane person to dig out fifty good American pennies for such a mediocre collection? If you did, what a shock you got!

By now you think I am a hopeless crank, Mr. Editor. I don't care if you do or not, but please, I beg you, please, I pray you, think over what I have written. I did not want to write this letter—I do not enjoy hurting anyone—but I have been prodded beyond endurance by the fear that you might be thinking seriously of inflicting more reprints on us.

Have I no good word for you? Oh yes. I like the new size. Why? It is more convenient, for one thing. Another reason is that the rest of the magazines publishing science fiction—including the very respectable "Blue Book"—use the small size. At any rate, don't keep skipping from size to size. It is very trying to those of your readers—and there are many, if the column of discussions is a guide—who bind their magazines. I remove a story I like from the magazine in which it is published and bind it with others of its type. The other stories in this group may be from three or four different magazines. Need I say more?

I like your (apparent) present policy of printing two serials to an issue. Science fiction needs length in which to present a strange idea. Why? Because the strange idea must be made plausible, and to make an idea plausible requires words. Elementary, my dear Watson. Have not the good stories been the long stories?

FRANK J. PETERS,
2622 Third Street North,
Minneapolis, Minn.

(The heading which we have placed before your letter may be taken as a comment on it. As an instance of varying judgment "The Second Deluge" was greatly admired by some of our correspondents yet you criticize it unmercifully. We have many requests for reprints. What you say about length of the stories is quite to the point. As an example, we may cite the popular novel "Anthony Adverse" which is about one thousand pages in length, so when we give perhaps a tenth of that number of pages to a story, we need not feel that it is too long. While you do not compliment us, we are very glad to publish such a well thought-out letter as yours.—EDITOR.)

Some Appreciations of Stories—Stories Written in the First Person Objected to

Editor, AMAZING STORIES:

I have been reading your magazine for a good while and find it to be great reading material and quite educating.

This is my first letter which I hope will appear in one of the "Discussions" columns.

Just got through reading the February issue and considered the "Time Jumpers" by Phil Nowlan to be the best. Let's have more adventures of Cynthia and Ted!

"Terror Out of Space"—this serial comes next in line—the "Triplanetary" serial comes next. All the others were good.

I think the authors should cut out writing in the first person—it is monotonous. Many a person would have bought a mag. but for the simple reason of finding it crammed with too many stories of (I this's and I that's, etc.). What's wrong? Can't an author write any other way?

Don't mind my kicking as you run the mag., but I think more of your readers would enjoy the magazine and plenty outsiders who are skeptical about "I's" who would take to the magazine instead of leaving it on a rack for a "poorer" magazine.

Wishing you greater progress in the future, I will stop as I might be taking up too much of your space.

STANLEY POVLAK,
Box 213,
Salina, Pa.

(We think your criticism about the writing in the first person is incorrect and in many of our stories it does not appear at all. The wish at the end of your letter is a duplication of our own. We certainly want progress to the last extreme degree and we venture to hope that we are progressing.—EDITOR.)

A Letter That Is So Appreciative That It Makes Us Blush—It Is a Comfort After Some of Its Predecessors

Editor, AMAZING STORIES:

I like the present size of A. S. and the January and February numbers are interesting, especially the serials. It is pleasant in "Terror Out of Space" to meet some Martians who are neither angels nor devils nor ruthless exploiters of an inferior planet. It would seem that Professor Jeans is of the opinion that there is no other planet in the universe capable of supporting men and women similar to our-

selves. Of course Alfred Russel Wallace would not allow that Mars could do so.

I was exceedingly angry when you disbelieved that man would ever reach the moon. It brings to mind beliefs in a speedy end of the world and its inhabitants and of stories of Flammarion and H. G. Wells, where the human spirit was transferred to a fresh body on another planet. (Also "Station X".) You believe, I take it, that man, as he is to-day, will not be able to live more than four miles above sea level and a lesser distance below the surface. Of course there may be observation stations, etc., ten or even one hundred miles up. Be that as it may, the prospect of reaching the moon does not now fill me with unmixed pleasure. However, Professor Pickering's sectional maps of the moon are wonderfully clear. (I like them better than the excellent ones in G. P. Serviss' story "The Moon") and we can enjoy these for the time being. I did think of delivering you into the power of the Emkls *without a hypnotic nullifier*. Really though, after forty million years, could not Professor Jameson have sent missionaries to the Emkls to turn their hearts to better ways?

Joking apart, AMAZING STORIES is a magazine for young and old, and if ever possible, who is the first man I want to see after reaching New York? Why, T. O'Conor Sloane!

FRANCIS H. P. KNIGHT,
152 Harden Road,
Walsall, Staffs, England.

(This letter we think is quite a comment on preceding ones. It is pleasant to have here a correspondent who sees the good in AMAZING STORIES. It is beyond the capacity of the writer's understanding to know why his views about going to the moon should irritate anybody. Considerable hydrogen and several human lives have been lost in the attempt to rise a few miles above the surface of our sphere, but there is nearly a quarter of a million of miles between us and the moon yet to be traversed.—EDITOR.)

The Picture of the Jules Verne Monument in Nantes, France

Editor, AMAZING STORIES:

In reference to Mr. J. Harvey Haggard's suggestion that you print the illustration of Jules Verne's Tomb in colors on the cover of AMAZING STORIES to provide a suitable picture for framing.

I, as president of the International Scientific Association do hereby place my vote and the votes of all members, to second the motion. Enclosed is a sheet containing a partial list of names. It is impossible to gather all individual signatures, so this list will suffice. I am authorized to do this. The number of members totals 689, most of them not active at present, because of the depression, but all in favor of the project.

Also, as chairman of the Jules Verne Prize Club, I submit the entire membership of 96 names also.

We suggest that the illustration be presented, however, not on the cover, but as an inner illustration, in color, and preferably the best color work obtainable. This would obviate the titles, names, etc., of the cover plan.

RAYMOND A. PALMER,
4653 North 24 Place,
Milwaukee, Wisconsin.

(The city of Nantes' Memeroial to Jules Verne has already been used for our cover, as you can see, but in the future we may make some such use of it as you suggest. We thank you for the list of names. The distinguished author we speak of was born in Nantes, but soon made his home in Amiens and died there. In the latter city there is another monument in his memory.—EDITOR.)

Back Numbers of AMAZING STORIES for Sale

Many of the Monthly issues and Quarterlies as well as the Annual can be supplied by the Swanson Book Company, Washburn, North Dakota.

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Editor, AMAZING STORIES:

I wish to sell a complete set of AMAZING STORIES from 1929 to 1930 inclusive.

They are in perfect condition except the following of which the covers are missing: August and December 1929; February, June and September 1930. The latter five will sell for 20c each and the others 25c each. All magazines sent postpaid.

Paul Poulsen,
19 Byron Avenue,
Ansonia, Conn.

A Letter from the Philippines from an Appreciative Reader

Editor, AMAZING STORIES:

Have been reading your magazine for many years and like it very much. This is my first letter to this department though.

I still remember such good stories as "Death from the Skies," "The Steam God," "The Prince of Liars," Stone from the Green Star," last installment of " Skylark of Space" and many others.

Have just finished reading the March issue and here are my comments:

Morey's covers are always good. His colors are not "vulgar" and he paints pictures in a striking manner—rather, he has an original touch of his own. But somehow, I do not like his inside illustrations. The March cover however, done mostly in blue, green, and yellow, really attracts the eyes. What about a cover depicting a scene in space? Say, a collossal battle from Smith's "Triplanetery"? Black, yellow, red and violet would be vivid colors.

Your editorial "Progress in Material Economy in the Future" was very interesting. So were your former ones.

"Triplanetary" is "whizzing" onward with a big bang! Only Edward E. Smith, Ph. D., could write such a hit.

"Peril Among the Drivers"—m-m-m—let me see . . . . it's good somehow but "The Ant with A Human Soul" was better, I think. Can Mr. Olsen write an interplanetary tale? Have enjoyed his scientific stories in the past.

"Terror out of Space"—fine. What became of the adventurers? Still waiting for the next issue.

"The Man Who Stopped The Earth" is a good short story.

"Job of Blending"—fair.

"The Corona of the Sun"—good bit of information.

"M. S. Found in A Bottle"—no comment. Have read it before.

The "Discussion Columns" are always interesting as ever. I like the readers' sometimes-breezy letters and am also surprised to see that AMAZING STORIES really reaches different parts of the world.

Can't you give us a sequel to "Cleon of Yzdral?" What became of Leinster, Capt. Meek, Cummings, Gelula, Hamilton and the host of old favorites? What became of your illustrator Wesso?

I can say that I am still enjoying AMAZING STORIES as I did in the past and I wish this magazine of "ours" more laurels in the future.

J. R. Ayco,
Ateneo de Manila,
P. O. Box 154, Manila, P. I.

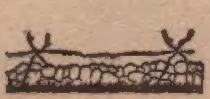
(This letter from the Philippines is certainly very pleasant for us, as we like to feel that our magazine circulates in distant longitudes. We get numerous letters from the Antipodes and for that reason are delighted to publish the present one. In any case, such appreciation as yours is very encouraging and makes our efforts easier to maintain.—EDITOR.)

A Service Book Wanted

Editor, AMAZING STORIES:

I would like to buy, or borrow, a copy of the book "Conquest of Mars." by Garrett P. Service. If any reader has this book, I wish they would get in touch with me in care of AMAZING STORIES, 222 West 39th Street, New York City, N. Y.

C. A. Brandt,
Book Review Department.



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